Industrial Finishing

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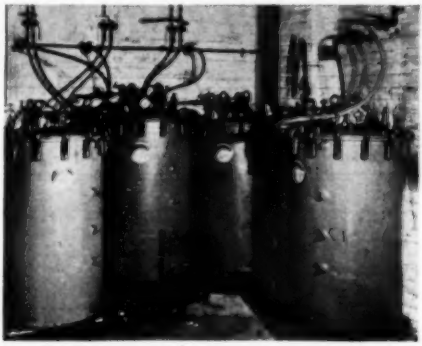

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LET FACTS AND FIGURES SHOW ADVANTAGES (IF10-Gray)

From the Editor's Desk

WHETHER we like it or not, we are all effected more or less by the numerous changes that have occurred, that are occurring and that are in line to occur in the industry we are identified with; and many of these changes are taking place almost overnight. One of the results of the development and improvement of so many new materials (on the part of finishing material manufacturers) and the changing of materials, designs, methods, products, labor, management and competition (on the part of finish users) has forced into being what might be properly called the "completely engineered finish" or "tailor-made finish," if you prefer.

In other words, the manufacturer or supplier of finishing materials makes a survey of the prospect's requirements and then formulates and prescribes materials and methods for doing the complete finishing job.

The concern supplying finishing materials does all that is necessary in the way of laboratory work, material testing and experimenting, and then assumes full responsibility for the final result at the customer's factory. Several finishing material concerns—from the smallest to the largest—are already doing this; and others are preparing to handle more future business in this manner, which means, of course, that an increasing number of finish users are going in for the "completely engineered finish."

W. H. Rohr

Managing Editor

Cutting to Fit

LILLY Varnish
With the Right

Your Specifications for a Particular Job

Every industrial finishing job presents its own special and particular requirements. At best only indifferent success can possibly be obtained from the use of a standard product. In some element, the standard formula is sure to fall short of a perfect fit, no matter how high it may be in quality. For complete satisfaction, the lacquer, varnish or enamel to be used must be made to meet certain definite specifications.

Appreciating the necessity of fitting quality to the specific demands of the job, the Lilly laboratory staff gives the most conscientious and sympathetic attention to every individual problem. With a background of experience in the industrial finishing field, unequalled by any other organization in the country, we develop a special formula, cut to fit your specifications for the particular job involved.

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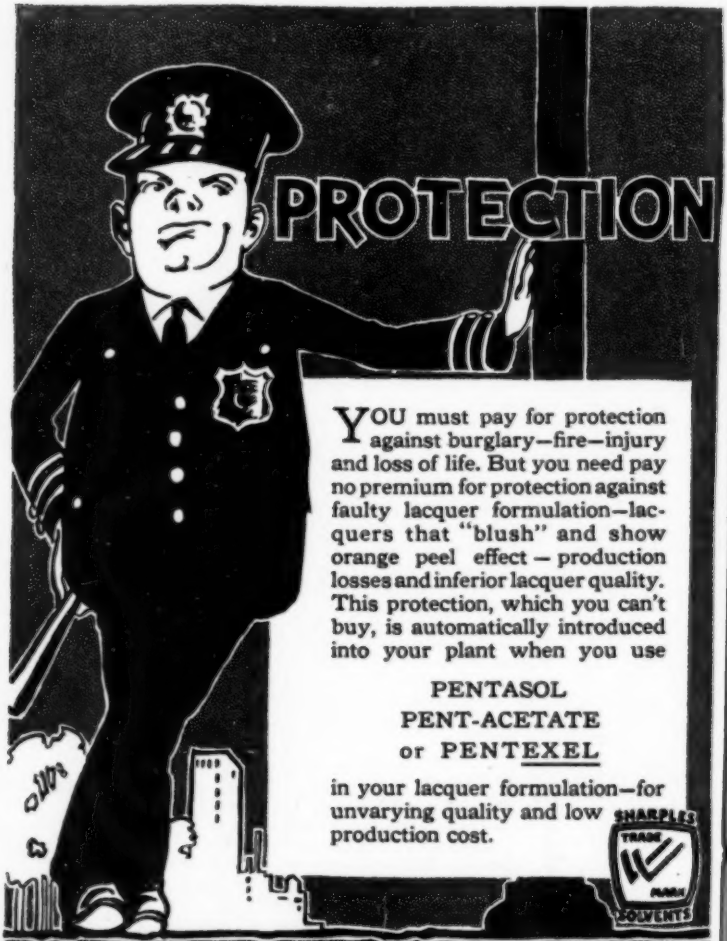
PROTECTION
YOU must pay for protection against burglary—fire—injury and loss of life. But you need pay no premium for protection against faulty lacquer formulation—lacquers that "blush" and show orange peel effect — production losses and inferior lacquer quality. This protection, which you can't buy, is automatically introduced into your plant when you use
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Another, and to the DeVilbiss customer, immensely valuable work done in this department is the development of the most efficient methods for using spray-painting and spray-finishing equipment — how to use it, what for, its capacity, probable life, cost of operation under various conditions, maximum efficiency, best handling methods.

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The illustration at the top of the page shows the drafting room and machine shop in the DeVilbiss Engineering Dept.

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Avenues of Loss And How to Avoid Them in the—

Transportation and Transfer of Finishing Materials

By
*C. E. FARRINGTON**

What methods of shipment, transferring and handling, and what types of containers have been found especially satisfactory and economical to avoid losses through settling of pigments, discoloration and chemical changing of materials in storage, in transit and in service

THE DELIVERY and transfer of finishing materials from shipment containers to the spray-gun container in such a manner that all pigments remain intact and in suspension, has long been a problem confronting both the manufacturers and users of these materials.

The transfer of finishing materials from manufacturer to user is commonly accomplished by (1) delivery in 5 gallon pails, (2) delivery in 30-gallon and 55-gallon drums, and (3) delivery in tank cars.

Delivery of clear or non-pigment carrying finishes is most cheaply accomplished in tank cars—where volume of business permits and when there is no danger of discoloration from contact with steel—but the delivery of even very slightly pigmented material in tank cars is unsatisfactory unless both cars and storage tanks are equipped with mechanical agitator devices.

*C. E. Farrington Co. (chemical engineers and machine builders; special appliances for paint and varnish manufacture) Phoenixville, Pa.

In Tank Cars

Long continued stirring of finishing materials is a risky performance inasmuch as the great stirrer tanks, such as giant centrifuges, are liable to cause some undesirable chemical action, which will change the character of the material. Big tank storage equipment involves so great an expenditure, and the risk just mentioned is so serious, that it should only be used after careful tests on a small scale—and with strict provision in the long distant future for avoidance of the assumption that similar material from another source of supply will outturn properly from such agitator tanks.

Where these adverse factors do not interfere, a saving as high as 30c per gallon can be effected by transportation in tank cars—giant tank storage and efficient pipe line systems delivering at the stations of use.

In Drums and Barrels

Delivery in drums and barrels comes next in point of economy;

for this work the steel drum now reigns supreme where there is no danger of discoloration from contact with steel. This discoloration is caused by acid action. Atoms of hydrogen are replaced by atoms of metal. A simple test is to fill two small bottles or test tubes with the material (shellac, lacquer or enamel) and drop into one of them a few small carpet tacks or clean steel turnings. In some cases the color change will occur in a few hours; in other instances no change will show for many days; then suddenly the action will take place.

Tests Protect User

Manufacturers should make tests covering many months, and buyers should exact guarantees that they will be protected by such tests. Instances have been reported where automobile body color could not be matched when one part of the body was scheduled for finish on one day and the other part scheduled for the next day. This color change has always been guarded against by careful makers of shellac and varnish, who ship in glue-lined wood barrels and in wooden kits instead of in tin cans.

A considerable measure of protection is provided by the use of tin-lined drums, but they cost three to five times as much as untinned drums and are useless or unsafe after five to ten trips, as the liquid material penetrates to the steel through microscopic holes in the tin coating, and acts like an electrolyte. Then a much more destructive discoloration ensues. One lacquer maker reports a loss of 6,000 such drums in one year—condemned because of lining corrosion and because defectively designed agitators scraped off the tin linings.

It is easy for paint and lacquer makers to discriminate their shipments and send some of their materials safely in the cheapest drums, others in tin-lined drums subject to careful and complete inspection before re-use, and still others in old style but absolutely safe glue-lined wood barrels. For all these packages, reliable agitating equipment is available at very low cost per gallon.

Such drums are standard in 30-gallon and 55-gallon sizes, and a recent development has brought down the container price (cost per gallon) of the 30-gallon mixer-drum of plain steel to less than the cost of the stirrer-less 5-gallon pail.

Handling Methods

Finishing materials in pails are commonly priced 10c per gallon more than drum shipments, and many paint and lacquer makers claim that this differential does not cover the increased cost inasmuch as there are 179 factory "handlings" in the shipment of eleven 5-gallon pails compared to ten "handlings" for a 55-gallon drum. A similar penalty follows the small package through its subsequent history. An interesting "cost per gallon" item is developed by secretly holding a stop watch on a $40-per-week workman while he opens a 5-gallon pail and stirs its contents to a perfect mix. The complete cost history of the pail at that station frequently totals $1.00, or 20c per gallon.

Drums of 55-gallon capacity may be elevated by chain hoists to a height that will permit their contents to be drawn off directly into the spray gun containers, but chain hoists must be swung from a fixed point overhead or mounted on a very expensive overhead rail system. Far better are the low

cost devices called "tilt-skids" with which the heaviest drums are elevated so that their contents may be drawn off directly into spray containers and easily moved to the most convenient positions. When drums are so placed, the use of intermediate containers, which catch dirt and permit evaporation, is dispensed with.

Agitator drums are inexpensively provided with vapor tight bungs, which greatly reduce fire risk while stirring. These bungs function either for hand or power devices. In handling lacquer in pails a very serious fire risk develops wherever the empty pails are stacked. Even the transportation of such empties to the dump by truck involves a considerable fire risk which should be conscientiously guarded.

Straining Lacquer Through Filter Paper

In the accompanying sketches I give the steps of a simple hand straining operation wherein a

small quantity of lacquer is stained through filter paper—this method being used only on a comparatively small job of very high-grade work.

We use sheets of Japanese filter paper for straining paints and lacquers. Two or three sheets are used and the material to be strained is placed in the center. The paper is then rolled up and twisted from both ends. Clean fine material oozes out from the center.

In larger quantities, of course, we use silk cloth or organdy, as the ordinary cheesecloth will not do.

The Japanese filter paper is of linen and stained with an astringent solution called "sibu" to render it moisture resisting.—F. S. Araki.

Hilo Promotions Reward Loyal Service

The Board of Directors of the Hilo Varnish Corp., Brooklyn, N. Y., recently announced the following promotions as a reward for many years of loyal service: W. L. Schwalb to be gen. plant mgr. and purchasing agt.; Francis X. Ward to be ass't. treasurer; Theodore Kleine to be credit manager; George Dressel to be cashier. Appointments previously made were: vice-pres. A. G. Schumann, gen. supervisor of trade sales; A. Craig, Jr., trade sales manager.

Alsop Engineering Co. Incorporates

The Alsop Engineering Co. of 39 W. 60th St., New York City, known for years as the developer and manufacturer of Alsop "Hy-Speed" liquid processing equipment, has received its charter as a New York State corporation under the name of the Alsop Engineering Corporation.

The new officers of the corporation are: Samuel Alsop, president; Walter W. Freystedt, vice-president; Charles E. Crowley, treasurer; B. E. Alsop, secretary. All of these officials have been connected with the Alsop company for many years.

Alsop products include "Hy-Speed" portable electric mixers, internal pressure filters, vacuum electric bottle-fillers, portable electric transfer pumps, water filters, and "Alsop" glass-lined mixing and storage tanks. A new, profusely illustrated catalog of all Alsop "Hy-Speed" equipment is now on the press.

Solubility of Stain Colors in Water

By
S. S. HARKAVY

Experienced colorist explains the effect of hard water on certain stain solutions, and lists a number of color materials, with information about their solubility and performance characteristics

MANUFACTURERS and consumers of stains have often inquired as to the solubility of various dyes and water conditions affecting their solutions. Often harmful results are blamed on the color, which in many cases is not at fault.

For example, I have in mind an incident in the experience of a manufacturer of stains for the silk and lampshade trade, an acquaintance of mine who sells his stains in liquid form, usually bottled in glass containers of from one to five gallon capacity.

Recently the manufacturer made up and stored 50 gallons of a 5% solution of napthol yellow concentrate in containers of five gallon capacity. This solution, after standing, a week assumed a sort of muddy, cloudy appearance. Upon discovering this condition he declared that the solubility of the color was poor. However, knowing that napthol yellow is of excellent solubility, I suspected that his difficulties came from another source. Accordingly, I procured a sample of the color and water used in the manufacture of this stain and made comparative tests, using in each case 5% solutions.

In my solution A, I used distilled water, but in solution B I used the same water as the manufacturer used. I allowed these solutions to stand undisturbed for a week. During this period of time, I noticed a pronounced reaction took place. Solution A (made with distilled water) remained perfectly clear, but solution B assumed that same muddy, cloudy appearance of which the manufacturer complained.

I made a hardness test of the water used in solution B and found that it contained 68 parts of hardness per 70,000 parts of water. This hardness was primarily of a temporary nature. I informed the manufacturer about the condition of the water he was using, and he immediately corrected it, after which his troubles disappeared.

Few finish manufacturers or users have any idea about the general industrial water conditions that prevail throughout the U. S., or what effect this may have on the materials they use. Differences in location usually mean differences in the water hardness conditions of local industrial water supply sources. The so-called soft water states border the regions tributary to the Atlantic Ocean, Gulf of Mexico, and Pacific Ocean. Florida is an exception, since it has extremely hard water, but with this single exception the hard water states are located in re-

gions far removed from large bodies of water.

In the U. S. Government's Report on Water Supply, paper 559, published by the U. S. Geological Survey, entitled "Relations Between Quality of Water and Industrial Developments in U. S.," there is an interesting map that shows "average hardness, by States, of water furnished by public supply systems in more than 300 cities in the United States."

This information emphasizes the fact that in states where there is hard water, stain makers must take due precautions. They must bring the hardness factor down to a minimum or risk being confronted with costly color troubles when using colors that are sensitive to the precipitating action of the alkali metallic salts (calcium, magnesium, etc.).

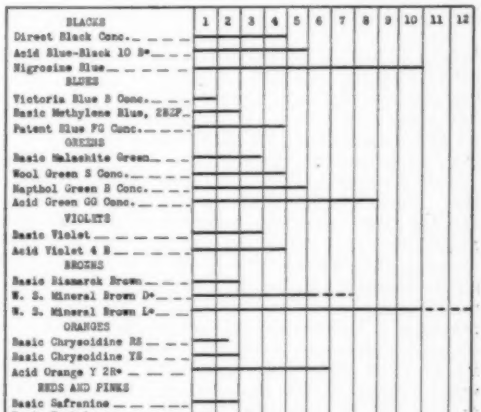
Many waters, useful for drinking purposes, are unsatisfactory for certain industrial purposes. Absolutely pure water is limited to the chemical laboratories; it is commercially impractical and uneconomical. To evaporate 1,000 gallons of water would cost approximately $6.60, taking the coal cost at $12 per ton and the evaporation factor of 1-lb. of coal to 7½-lbs. of water. It is advisable to consult a local chemist as to possible methods of correcting any water hardness condition that may be found.

Now, with this limited insight in regard to water conditions, I believe it is timely to discuss the individual dyes, their solubility

The accompanying graphic table conveniently shows solubility points of the most frequently used basic and acid staining colors. Solubility point (referred to in the article as S.P.) indicates the amount of color by weight (lbs.) which, when dissolved in 12 gallons of boiling water, will make a saturated solution on cooling. In this chart each numbered column represents 1-lb.

*Colors soluble in water but gradually forced out on cooling.

- - - - Indicates solubility point dependent on market brand.



points, solution conditions, and factors of importance regarding the making of dye or stain solutions.

Note: The approximate solubility point (S.P.) is the quantity of color (by weight) which, when dissolved in *12 gallons* of boiling water, will make a saturated solution on cooling. Some dyes are extremely soluble in water, but upon gradual cooling they are forced out of solution; others do not come out immediately but are affected in course of time.

Blacks

Direct Black Conc: S.P., 4-lbs. In making solutions of this dye, acid waters should be avoided as they cause precipitation and change of shade. A small quantity of soda ash is usually used in making the solution.

Nigrosine Jet, Blue Shade: S.P., 10-lbs. When nigrosine is used in heavy staining solutions, undesirable bronze effects are produced, but this may be reduced to a minimum by the addition of castile soap or denatured alcohol.

Acid Blue-black 10 B: S.P., 5-lbs. When a solution above the concentration of 2% is used, particular care should be taken to keep the temperature of the stain above 140° F., because when the solution cools to room temperature, it coagulates and forms a thick paste-like mass. This mass, when re-heated, dissolves again. Bronze effects may be dealt with as specified in the preceding paragraph.

Blues

Patent Blue F. G. Conc: S.P., 4-lbs. In using heavy quantities of this dye, care should be taken to first make a paste of the color with cold water, then pour hot water on top of the paste until the desired concentration is obtained. This procedure will reduce gumming of the color to a minimum. If gumming should set in, vigorous agitation and stirring will readily force the gummy mass into solution.

Basic Methylene Blue Conc. (zinc-free): S.P., 2-lbs. Methylene blue (zinc-free) has its advantages over methylene blue concentrate. When methylene blue concentrate is used in copper tanks, it produces faulty results due to the sludge usually formed on the sides of the containers.

Note: Basic colors should be dissolved with the aid of acetic acid, approximately 2 pints to 12 gallons of stain.

Victoria Blue B Conc: S.P., 1-lb. This color, when used in concentrated solutions, produces bronze effects. This fault is difficult to overcome, but denatured alcohol will help to minimize it.

Browns

Water Soluble Mineral Brown (dark): S.P., 5 to 7-lbs. This dye is soluble in boiling hot water, but a slight sludge is produced due to earth impurities. Super refined mineral browns are practically free from sludge.

Water Soluble Mineral Brown (light): S.P., 10-lbs. The properties of this color are similar to the above. Refined flaky varieties of this color are now obtainable. The flaky variety is soluble as high as 12-lbs. to 12 gallons.

Basic Bismarck Brown R.S., Y.S: S.P., 2-lbs.

Greens

Wool Green S. Conc: S.P., 4-lbs. Precautionary measures recommended to prevent bronzing and gumming when making heavy solutions of this dye.

Acid Green G.G. Conc: S.P., 8-lbs.

Napthol Green B. Conc: S.P., 5-lbs.

Basic Malachite Green: S.P., 3-lbs. This dye produces bronze effects in solutions above the concentration of 1-lb. to 12 gallons. Denatured alcohol is an aid in minimizing this undesirable condition. The dye is affected by copper therefore the color should not be stored in copper tanks.

Oranges

Acid Orange Y, RR: S.P., 6-lbs. These dyes, if left standing in saturated solutions, will gradually crystallize. There are brands of acid orange (reduced) which will minimize saturated crystallization. Acid orange is sensitive to the action of hard water. If a small quantity of magnesium or calcium salt is added to a dye solution, precipitation and cloudiness set in immediately.

Basic Chrysoidine Y.S., R.S.: S.P., 1½ to 2-lbs.

Pinks

Eosine, Phloxine, Erthrosine: S.P., 10-lbs. These colors are sensitive to acids. The dyes should not be stored in lead-lined tanks, as lead will produce precipitation and alteration of shade.

Basic Rhodamine 6 G, BX: S.P., 3-lbs. Bronze effects are produced in heavy stains.

Reds

Croceine Scarlet MOO Conc: S.P., 6-lbs. Bronze effects are produced in heavy staining solutions.

Lake Scarlet 2 R: S.P., 8-lbs. This dye is sensitive to the action of barium salts. Water containing these salts should be avoided.

Azo Rubine X Conc: S.P., 4-lbs.

Violamine 2 R, 4 R: S.P., 4-lbs. This color foams copiously, but the addition of various anti-foam oils will aid in correcting this difficulty.

Basic Safranine: S.P., 2-lbs.

Basic Fuchsine: S.P., 3-lbs. This dye produces bronze effects in solutions above 1% concentration.

Violets

Basic Violet: S.P., 3-lbs. Bronze effects are produced in heavy staining solutions.

Acid Violet 4 B: S.P., 4-lbs. Observe the usual precautions against gumming and bronzing.

Yellows

Chinoline Yellow W. Conc: S.P., 4 to 5-lbs.

Napthol Yellow L Conc: S.P., 4 to 10-lbs. Observe that this color has a wide solubility range. This range is taken as an arbitrary figure due to the various brands now in use. Some brands are extremely soluble while others are relatively poor. It would be well for the consumer of this dye to make comparative solubility tests of the brands obtainable; he may be surprised to find that there are many brands superior to his present standard.

Tartrazine EX Conc: S.P., 10-lbs.

Metanil Yellow Conc: S.P., 3-lbs. Saturated solutions of this color produce crystalline effects upon cooling. When in use, the temperature of the stain should be above 140° F. This dye is sensitive to hard water.

Basic Auramine O EX: S.P., 1-lb. In making solutions of this dye, water should not be hotter than 160° F. Extreme heat is destructive.

In conclusion I should like to add that all dyes are not affected by hard water, but the advantages of using soft water—both from the standpoints of economy and excellent results—are so apparent

and well known that there is no question as to the value of its use.

Why Automobile Finish Cracks or Chips

Chipping, blistering and cracking are often due to the fact that the surfacer has been formulated to meet "easy-sanding requirements," causing the manufacturer to make a "short" material to meet these requirements.

After a short time, this type of surfacer usually becomes very brittle. Automobile manufacturers who specify quick-drying surfacers that are easily sanded, should beware of the results of chipping and cracking of their finish.

So far as I can learn, it has been impossible to give the automobile industry long-oil baking surfacers that will bake out quickly and still have a flexible or durable surface. It is also impossible to give them a "long" baking surfacer that will sand easily without leaving sand marks to a great degree or affecting the durability of the surfacer. However, should the primer and surfacer be satisfactory in every respect as to flattening out, baking to the surfacer, or the lacquer chipping off or cracking can be caused by the lacquer not adhering to the surfacer, or the lacquer not having enough plastecizer in it.—E. H. Guth.

Handy Stencil Stand

The painter or finisher who has much stenciling to do will appreciate the convenience of the light paint-and-stencil stand shown in the accompanying illustration. It is a simple pine box 8 x 12-in. in the clear, mounted on four legs each 1 x 4 x 30-in. The box is divided at the middle by a wood partition surmounted by a handle of the same material, this handle making it easy for the stand to be carried about.

One of the compartments in the box is used for the paint can and brush, while the other is divided by strips of sheet metal into several sections into which small numbering stencils can be placed. A few stencils can be hung from nails or hooks on the outside of the stand.—J. C. Coyle.

New Booklet on Aluminum Paint

The Aluminum Paint Co. of America, Pittsburgh, Pa., has published an attractive, illustrated booklet entitled "Aluminum Paint." This booklet contains 45 pages, 8¼x8½-in. in size, and gives a brief description of the unique physical properties of aluminum paint, and the proper method of its application on iron, steel, wood, etc. It explains how and where to use aluminum paint, including in the latter several large industries.

FINISH IT WITH

THE very important part of the value we contribute to Zapon is the pioneering experience that has led to the present day highly perfected development of

PYROXYLIN LACQUERS

Motivated by the same spirit as the pioneers of covered wagon days, we have blazed every scientific trail leading to the highest degree of pyroxylin lacquer quality and uniformity. Every experimental test, every chemical process, all research and basic materials have been brought directly under the complete control of our laboratories.

As a result users of pyroxylin lacquers for every known purpose, the world over, are finding there is no substitute for Zapon. No approach to its leadership, no comparison as to its results, its satisfaction and economy.

Behind the use or specification of this product stands a reputation that has made Zapon "The acknowledged standard since 1884."

Regardless of what your finishing problem may be, the complete facilities of our service laboratory are constantly at your disposal without cost. Let this scientific knowledge and experience aid you in the more practical and economical solution of your problem. We invite your inquiries.

THE ZAPON COMPANY

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STAMFORD, CONN.

THE RECOGNIZED STANDARD OF QUALITY SINCE 1884

Aircraft Finishing — II

By
C. E. KIRKBRIDE

Project Engineer at Naval Aircraft Factory, Philadelphia, Pa., reveals interesting information about selecting, treating, cleaning and finishing the metal, wood and fabric parts of modern aircraft

IMMEDIATELY prior to the application of the paint finish, the assembled part should be thoroughly cleaned. This may be accomplished by several methods. If properly performed wire-brushing or sandblasting will be satisfactory, hand sanding with No. 2/0 sandpaper or No. 180 garnet paper is equally as good. After cleaning, the surfaces should be washed with either hot water, chemical cleaner or carbon tetrachloride. Gasoline is unsatisfactory as a cleaner because it merely dilutes the oily surface and will not neutralize the alkali on the metal. This will result in poor adhesion of the primer and will not check incipient corrosion.

When the metallic surface has been thoroughly cleaned, it should be finished immediately and not touched by ungloved hands until at least the priming coat has been applied. If this precaution is not heeded, corrosion will set in later.

Prime Coat; Drying

Exceptionally good results may be obtained through the use of a good red-iron oxide primer having an oil base, used in conjunction with a high grade enamel as the finishing medium. Only a thin uniform priming coat should be applied and whenever practical, this coating should be baked.

Under no circumstances should successive coats be applied until the preceding coat has dried thoroughly. Negligence of this

IMPERVIOUS PRODUCTS

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FINISHING VARNISHES
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General Office — 436 Seventh Ave., Pittsburgh, Pa.
Factory — Rochester, Pa.

rule will result in premature blistering, peeling and loosening of the outer finish to such an extent that it will be possible to remove the paint in strips.

Next in order, after the preparation of the surface to be finished and the selection of high grade finishing materials, is the method of application. This can be accomplished by either dipping, brushing or spraying. It is recommended that all detail parts that form a part of the major assembly be given at least one priming coat prior to fabrication. This procedure will insure that all faying surfaces have been adequately protected.

Dipping; Spraying

The method of application will be largely determined by the size or shape of the part to be coated. For instance, the smaller items and tubular members can be dipped more expeditiously than sprayed. In these days of keen competition, it is obvious that brushing should be eliminated as far as possible.

Large items such as a completed float, hull or fuselage should be finished by spraying. While this method is comparatively simple, much harm will result if the technique is not properly controlled. It is essential to use the lowest air pressure possible and still maintain atomization. Too high an air pressure will separate the light solvents from the heavy base materials and carry them off in the form of mist and excess spray. This will not only prevent proper adhesion to the surface but will be the direct cause of other evils such as chilling, blushing, sanding, pitting, peeling, etc.

Fuselages and landing gear are generally constructed of tubular steel members. It is essential that the interior surfaces of such members be protected against corrosion. This should be done after all welding operations have been completed. There are on the market several good proprietary products suitable for this purpose; hot linseed oil, however, will give satisfactory service and is used extensively.

Protect Interiors of Tubing

In order to obtain best results, the hot linseed oil should be forced through the tubing under pressure. Small holes approximately 1/16-in. in diameter are drilled through the longerons at points where the shorter connecting tubing joins on, so that when the welding is complete the entire interior of the fuselage is thus connected.

The oil should be forced through from a pressure tank by compressed air. It should enter at a point in one of the lower longerons and go up to the top; then be allowed to drain and seal all holes in the tubing, thus making the unit both air and water tight. Drive screws, which can be purchased commercially, make excellent seals.

This method of protecting the interior of tubing is recommended where safety and long service is desired. Corrosion on the outside can easily be detected and stopped, but on the inside its havoc goes on unnoticed.

Metal and Wood Surfaces

Prior to finishing the exterior of a steel fuselage, all scale or evidence of rust should be completely removed by sandblasting.

After being thoroughly cleaned, the surface should receive one coat of a good iron oxide primer (oil-base only) and two coats of aircraft enamel (color to suit).

AT LAST!
a Flat Lacquer
that is always uniform

DAY'S No. 6161 Flat Lacquer presents a new kind of result in the flat lacquer field. This is what produces the unrivalled clearness and the constant uniformity. No. 6161 is furnished in any degree of flatness or sheen and *will not change in the container.* You would expect to pay a big price for a flat lacquer with these unusual qualities. But No. 6161 is priced very moderately. Order five gallons at the drum price for trial. If you aren't satisfied, return it at our expense.

James B. Day & Co., Chicago

THE DAY FINISH

Stain, Filler, Sealer
and Lacquer

ALL IN ONE DAY

Wooden ribs, spars, etc., should be protected with three coats of high grade varnish. The use of shellac or ordinary pyroxylin will not suffice, inasmuch as their waterproofing and protective qualities are practically nil on this material under conditions of exposure.

Fabric Covering

There are in vogue, two methods of covering airplane panels with fabric. One is known as the envelope method and the other as the blanket method. The "envelope" (or pillowcase) method derives its name from the fact that the cover is sewed together and then slipped on to the structure which it is to cover, in a manner quite similar to the process of covering a pillow with a pillowcase. This system is the best from a production standpoint because it minimizes hand sewing operations and saves much time and labor. The fabric must be accurately laid out and sewed in order to snugly fit the structure it is intended to cover. The main disadvantage of this method is that it cannot be used on certain types of wings.

The "blanket" method is probably the simplest known method of applying the cover on aircraft, but it requires a large expenditure of time and labor for hand sewing, etc. To cover a wing, the raw edge of the fabric is placed along the trailing edge and the fabric is wrapped around the leading edge, back to the other side of the trailing edge.

It is very important that only high grade cloth material be used for this purpose, preferably material that will conform to either United States Army or Navy specifications. Cheap material is generally devoid of strength and will deteriorate quite rapidly.

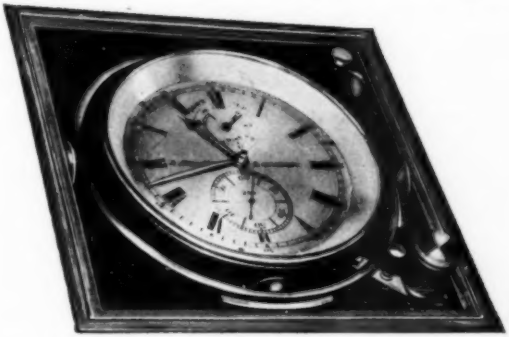
Doping Wing Fabric

In order to produce a satisfactory wing surface, several things should be considered. The fabric should be stretched to a uniform degree of tautness throughout the surface. This tautness can only be determined by trial, as the dope will add to that already given the fabric when applied and is limited only by the strength of the structure. It is not possible to exert sufficient force manually to weaken the fabric in its application, but if it is stretched too tightly at the start the dope will cause a marked distortion of the wing structure when it has dried.

The finish possessed by an object, whatever it may be, constitutes a very considerable portion of its sales appeal and also provides the necessary protection from the elements. It naturally follows, therefore, that the more carefully and thoroughly the finish is applied, the greater will be the return in sales, satisfaction and service.

To produce a surface that will have the least variation of tautness with subsequent changes in atmospheric humidity, the surface should be doped if possible the same day that the structure is covered with fabric. If the fabric is stretched tightly over the structure and then not doped for several days, it assumes a permanent set and loses tautness and will not produce a satisfactory finish. Changes in atmospheric humidity will also cause a variation in the undoped fabric if it is allowed to wait several days before doping.

Tick . . . tick
tick . . . tick
on through the years



WHAT could be more dependable than the ceaseless ticking of a ship's chronometer? It functions so accurately that watches are set by it. Skilled craftsmen spend days in grinding, assembling, adjusting and regulating before it is sent ticking through the years.

With the same precision, dependability is built into du Pont finishes. Years are spent by du Pont chemists in scientific research, skilful blending, testing and experimenting with raw materials.

Only a company like du Pont has the experience and the organized skill to conduct the research necessary to create this dependability of finish. That is the reason you may specify Duco, Dulux Finish, du Pont Wood Lacquers, 1985 Sealer and other du Pont finishes with the assurance of getting a perfectly dependable finish.

8 QUICK FACTS
that explain the leadership of du Pont finishes

1. Vast research and development organization.
2. Rigid laboratory control of all products.
3. Unequaled manufacturing facilities.
4. Technical chemical service.
5. Technical engineering service.
6. Sales and service organization.
7. Warehouse and delivery service.
8. Color advisory service.

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The Duco Oval on tag or seal helps buyers identify a Duco finish on many leading lines of furniture.

E. I. DU PONT DE NEMOURS & CO., Inc.
Industrial Finishes Division, Parlin, N. J., Chicago, Ill., San Francisco, Cal., Everett, Mass., Canadian Industries Limited, Paint and Varnish Division, Toronto, Ontario, Canada.

DUCO . . . made only by du Pont

Airplanes depend, to an even greater extent than do other commodities, upon the finish since the latter must provide not only the necessary appearance and protection, but must also tauten and maintain the tautness of the fabric under varying atmospheric conditions of temperature and humidity.

Two systems of doping are in general use, namely, the "pigmented dope" system and the "semi-pigmented dope" system. Either, if used correctly, will produce satisfactory results.

It is essential that the dopes used be of the best grade, and it is recommended that the material be procured only from those concerns who are known to be reliable.

Pigmented Dope System

The pigmented dope system is as follows: First brush on one coat of clear nitrate dope; allow to dry thoroughly and apply tape over the wing rib stitches. Next brush on a second coat of clear nitrate dope simultaneously with or as soon as possible after laying the tape, to avoid "high spots." When dry, gently scuff off the nap of fabric with No. 280 sand grits or equivalent, being careful to avoid rubbing holes in the fabric which is in contact with the structure. Next brush or spray the third coat of clear dope. Allow plenty of time for drying between coats. This should be followed with two coats of pigmented dope of the desired color, preferably sprayed.

Semi-Pigmented Dope

The semi-pigmented dope system will produce on aircraft fabric, a taut, well filled finish which is cheaper and lighter than the clear dope system. This system is as follows: Apply four or five coats of a good grade semi-pigmented dope, the number of coats being such as to give the required tautness. In this system, as well as the pigmented dope system, a smoother job will result if the first two or three coats are gently scuffed with No. 280 sandpaper, or equivalent.

"Flawless Floors"

National Artcrafts, Inc., 1819 Broadway, New York City announces new protective and decorative materials and treatments for new and old floors of all kinds—concrete, wood, linoleum, cork, magnesite, asphalt mastic, rubber tile.

What Automobile Colors Are Popular

Early fall trends in colors for motor cars are given in the Automobile Color Index which has just been issued by the Duco Color Advisory Service.

"Black," says the Index, "continues to maintain leadership, but on a declining movement. Blue exhibits a tendency to slacken its downward trend at this time. There is, however, little change in the intensities of the individual blue colors that comprise the current list of blue leaders. Keen interest has recently been displayed in greenish blues of high luminosity and rich purity on the order of Pemaquid blue, chromatic blue light and Blu-Moss."

Brown is in greater popularity and is making gains at the expense of black and blue. "Drab values in brown are extremely prevalent," the Index points out, "but an upward tendency in pure rich values has been observed of late."

While ranking fourth in preference, green is shown as remaining in remarkably steady demand during the past three months. The Index expresses the view that "the rate of decline for the green color group has not increased, and this may indicate that a bottom is being formed preparatory to a change in movement."

Maroon seems least in favor of all the major colors, while "interest in gray has undergone an abrupt change at the expense of maroon. Instigated by the introduction of recently developed chromatic grays of distinctive brownish, greenish and bluish hues, gray has advance in importance," according to the Index.

"We can not make our men use agitators," is

NOT THE TRUTH

The fault lies wholly in propeller type agitators that leave 65 to 80 pounds of pigment in the chimes and bottom of every drum of standard body paint or enamel; leave it regardless of most conscientious stirring; leave it because the tool design is both ineffective and defective.

Farrington Mixer-Drums have a CUT-LIFT action which out-turns perfect mix to the last drop without "killing" the operator. They never fail.

Insist on such deliveries and bear in mind that the per-gallon-cost of our mixer-drum service, even in the 30 gallon size, is considerably less than the cost of stirrer-less pail delivery.

C. E. FARRINGTON CO.

PHOENIXVILLE, PENNA.

Phonograph and Radio Case Finishing

By
ROLAND ROE

Member of Mills Novelty Co.'s organization (Chicago) explains the finishing process for metal surfaces on the company's coin-operated phonographs and radios, with intimate details about the blending of sap walnut and heartwood

COIN OPERATED instruments are public evidence of the capability of the manufacturer. That is the way we feel about it. Used entirely in public places, these instruments must be sound mechanically, finished durably and well appearing. It is toward this goal that we have worked and experimented with the cost of production always in mind, for that too is a vital factor.

In this article I will dismiss the mechanics of the instrument, for once perfected and installed in the case, they are foolproof and subject only to natural wear. Durability of finish and appearance form quite a different problem.

After much experimenting, we have developed a finishing process that produces a fine finish which, under extraordinary wear, has proved its durability; and what is perhaps most important so far as production costs are concerned, it permits the use of sap walnut plywood without detriment to the appearance of the finished cabinet. In fact we prefer to use sap walnut because of the fine figure effect and our success in blending sapwood and heartwood. This is how we do it:

Sap Staining; Blending

Starting with the cabinet in the white, we use clear water and a sponge to dampen all sapwood in the cabinet. In doing this we are careful to avoid getting too much water on the surface which, of course, would cause loose veneers. In sponging the sapwood we overlap the heartwood about ¼-in. and follow immediately with a brush coat of sap walnut water stain applied to the dampened sapwood to within 1-in. of the heartwood. The stain spreads over this remaining 1-in. space to the heartwood, blending the entire surface and elimi-

On open specifications Cabinet Manufacturers in every section of the country choose Murphy Permanent Stain

Why?

Because it saves time and money

One of the best known national advertisers lets his enormous contracts for cabinets out to concerns at strategic shipping locations in 13 states.

His specifications and inspections are rigorous.

After investigating Permanent Stain for over a year, this year's stain specification was made "optional" to the cabinet makers — either Water or Permanent Stain.

You must appreciate the significance of such a challenge, when *every* contractor finally chose Permanent Stain and is *now* using it.

Surely such a unanimous practical-production acceptance makes further written words unnecessary to invite *your* investigation.

Just consider these characteristics:

No grain raising to contend with.
Filling in 30 minutes.
Immediate "automatic blending."
Instantaneous "high-lighting."
Rapid "matching-in" of variable wood.

Murphy Permanent Stain penetrates deeply and rapidly, does not bleed, is fast to light and is uniform in color.

If you wish a demonstration or additional information, please write us.

MURPHY VARNISH COMPANY
Newark San Francisco Chicago
Essex Varnish Company, Newark
(Associate Company) *Baking Material Specialists*

nating the well defined sap line. I might say that we add two-thirds water to the full strength stain for this blending operation.

Cabinets are allowed to air dry for an hour and are then sanded with No. 3/0 sandpaper.

Stain-Fill; Lacquer Sealer

In the next operation we make use of one of the newer finishing materials and accomplish two operations in one, with a resulting economy in time and material. It is a combination coater which is brushed on the top, ends, grille, sunken panels and overlay. A lighter combination coater is brushed on the doors, stiles, rails and front base panels. The wood is stained and filled in one application, as this material is a stain that fills rather than a filler that stains. Within five minutes this coat is cleaned off with sea moss and ragged, after which cabinets air dry approximately 12 hours.

Then we spray a coat of clear lacquer sealer over the entire cabinet, and sand with No. 3/0 sandpaper after the sealer coat has dried 30 minutes. All mouldings are sanded with No. 2/0 steel wool.

Shading; Lacquering; Rubbing

After being dusted and cleaned, cabinets advance to the shading booth where lacquer shading stain is used for highlighting. This is followed by two spray coats of clear gloss lacquer. When the second coat is thoroughly dry we rub with 3/F pumice stone and a "wateroil" rubbing oil (miscible with water) which eliminates all difficulty in connection with haze or bloom so frequently encountered. In this rubbing operation we find that we get a quicker and better job by using No. 2/0 steel wool dipped in pumice and the wateroil rubbing oil, instead of the usual rubbing pads.

Inspection; Touching Up; Trimming

Inspection and touching up follow rubbing. For touching up we use a shellac stain made up of Bismark brown, black and shellac. In order to avoid the undesirable copper bronze effect, we have found it advisable to cut the two colors in separate containers, cutting thoroughly, allowing each to stand for an hour or two and then pouring off the top material of each into another container to make the touch-up stain.

The cabinets then proceed to the trim department for application of glass and hardware. From this point phonograph cabinets go to the motor department and radio cabinets to the chassis division for mechanical unit installation. These two lines converge to the final inspection, after which we lightly rub the cabinets with a paraffin-base oil, and they are ready for shipment.

Metal Finishing

There is very little hardware on these instruments, yet it might interest some of you to know how the metal coin slots and selector hardware are finished. These castings are made with the small indentations on the outer surface to resemble hammering. After cleaning with gasoline, we spray on a coat of gold bronze lacquer. This is allowed to dry for an hour; then a coat of oak paste filler, reduced by oak stain, is brushed onto the entire outer surface.

After drying about 30 minutes, the oak stain fill is wiped off lightly with dry steel wool which removes the dark color from the high places, revealing the gold bronze on this portion of the sur-

Let STILLE
prescribe your finishes!

Although Stille production includes a complete line of stock finishes the great majority of our production is on special formulae individually developed to meet the special requirements of our customers.

This is particularly true in the production of fine lacquers for both wood and metal products. We have been particularly busy with this special service during the past several months when manufacturers have been improving their production routine and frequently making radical changes in their products.

These changes invariably require revision of stains, fillers and lacquers to suit the new conditions, and Stille technicians have saved our clients considerable time, expense and trouble through quickly and positively coordinating finishing technique to new conditions.

Use this Stille Prescription Service. Take advantage of the specialized experience of the Stille organization and the recognized dependability of Stille recommendations.

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Main Office and Factory
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No obligation for a Stille Finishing Survey

Outline your requirements in a letter to us for our recommendations. Or if you prefer, a Stille specialist will make an individual survey of your finishing problem. Stille recommendations may provide a decided reduction in your finishing costs and will absolutely assure dependable quality results.

Write us today!

STILLE Rx

Finishing Specialists

Lacquers and Finishing Materials Developed to Meet Specific Production Requirements.

face and leaving the indentations dark. About five hours time is allowed for this coat to dry; then a spray coat of flat lacquer is applied. This finish produces the hammered antique brass effect.

In conclusion, I just want to say that I believe intelligent experimentation in the use of our present day, versatile, rapid-drying, finishing materials will prove the salvation of the woodworking firm that produces finished work. Really, the alert, open minded manufacturer who avails himself of modern methods, materials and equipment will be the one who ultimately survives.

Varnish Over Lacquer Undercoats

The use of lacquer undercoats under varnish has not been given much consideration. In the past, the cost of lacquer made it unsuitable for use in schedules where varnish was employed; also, because of unsatisfactory materials and insufficient knowledge of their handling, early attempts at using lacquer undercoats for varnish resulted in an unsatisfactory finish.

Recently, however, lacquer undercoats have appeared on the market under such names as "sealers," "building coaters," "base coats," etc., which contain 20% more of solids, sand easily, give good full body on the work, and are low priced (some satisfactory sealers are being offered at less than $1.50 per gallon).

The following is an excellent schedule for low-priced chairs, tables, etc., made of comparatively close grained wood:

1—After the wood has been sanded to a smooth surface, water stain. Dry over night.

2—Apply one doublecoat of lacquer undercoat; dry over night; sand to a smooth surface; wipe.

3—One coat of flat varnish (semi-gloss sheen). Dry over night.

The lacquer undercoat gives excellent results. It contains transparent pigment which tends to fill any open pores and surface defects, so that when it is sanded it produces a very good surface.

You will note that an over night drying is recommended for the lacquer. Although the undercoat may be sanded after drying for one or two hours, when to all appearances it is perfectly dry, it still retains a small quantity of solvents which, if varnish is applied, will prevent the varnish film from drying properly and will enter the varnish film, rotting it and causing it to become brittle. This is not mere theory; it is a fact that can be easily demonstrated.—Bernard Sanderson.

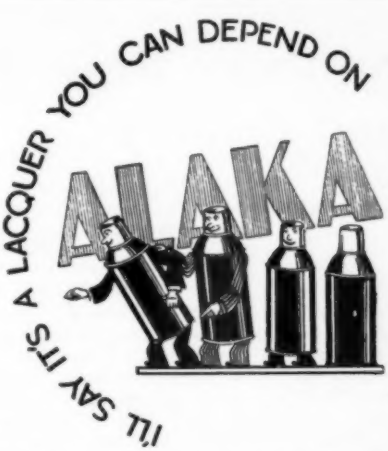
Finishing Materials Research

Grasselli Service Bulletins, which reveal findings of research chemists working in the interest of the paint industry, are available to those interested, according to a recent letter sent out by the Publicity Bureau of the E. I. DuPont de Nemours & Co., Inc., Wilmington, Delaware.

Uehlinger Joins Egan & Hausman

Mr. H. Uehlinger, formerly vice-president of the Hilo Varnish Corp., has been elected president and general manager of Egan & Hausman Co., Inc., to succeed Mr. Frederick G. Hausman, who has retired from business. However, Mr. Hausman will remain with the organization until he is convinced that his ideals of practice and manufacture are fully understood.

It is the purpose of the new management to carry on as heretofore, adding thereto what years of experience have brought. The Egan & Hausman Co. is located at Bodine and Hamilton Sts., Long Island City, N. Y.



HEY THERE YOU TIN BOTTLE! By gosh it's no wonder the Boss put a "Take me home for 30¢" on you. As a vacuum bottle you're not so hot.

Doesn't the plant you came out of give a darn how they dress you? How d'you ever expect to find a decent home looking the way you do? Why your suit is all wrinkled. As a matter of fact, it doesn't even fit you. You're all spotty like a bad case of measles. When you meet your maker you can tell him a thing or two about finishes. . . . .

Oh well — that's the long and short of it as they say in Wall Street.

LACQUER & CHEMICAL CORP.

214-222 40th ST. ~ BROOKLYN N.Y

CHICAG *makers of* **ALAKA** **PHILADELPHIA**

Synthetic Resin Varnishes and Enamels

By
J. M. VERDEROSA

This article—briefly explaining some of the features and characteristics of synthetic-resin finishing materials—is published to answer numerous questions and requests from *Industrial Finishing* readers

SYNTHETIC RESIN varnishes and enamels have solved several problems since their introduction to the finishing world more or less recently. They are fairly fast drying, have good adhesion and good build; they sand well and have exceptionally good elasticity and adhesion.

There are two types of synthetic resin varnishes and enamels—the air dry and baking types. They have the same general characteristics in flow and build as the oil type. They dry dust free in half an hour, and tack free to handle in three to four hours. They may be packed the next day.

The synthetic varnishes and enamels dry by evaporation and by oxidation, therefore conditions of the weather will sometimes affect the rapidity of their drying to some extent.

The reducing agent is turpentine.

They can be brushed or sprayed, although they have been developed principally for spraying; therefore, because of the rather rapid-drying properties it is not advisable to attempt to brush very large surfaces.

A complete line of finishing materials can be obtained in this new line—primers, surfacers, graining grounds, clears and enamels.

The spraying is done with about 60-lbs. of air pressure. If a single coat is desired, a fairly heavy one may be applied, but if two coats are necessary, the first should be applied relatively thin and the second coat heavy—after the first coat has dried from ½ to 1½ hours. The two coats should dry overnight before packing.

The spray equipment should be cleaned with turpentine or thinner immediately after being used. The material sets up rather fast and as a result it has a tendency to clog up the spray gun.

Synthetic varnishes and enamels are adapted to finishing all types of material—metal, wood, composition, etc. Some of the surfaces it is being used on today include flexible tubes, refrigerators, furniture, machinery, toys, juvenile furniture, reed and fiber furniture, partitions, shelving, heaters, doors, fixtures, and what not.

The baking schedule for the baking type of synthetic resin products is approximately as follows:

5 hours	@	150° F.
4 hours	@	160° F.
3 hours	@	180° F.
2 hours	@	200° F.
1½ hours	@	225° F.
1 hour	@	250° F.
½ hour	@	300° F.

When two coats are applied, both coats may be baked at one

We've LEARNED a LOT..... and forgotten Little!

.... and everything that we've learned in this business of making fine finishing materials is summed up in the products and service we offer you today.

We learned, for instance, to produce new finishes in keeping with style trends .... to manufacture lacquers that meet exactly the specifications of every customer ... to work out new and less costly methods of application ... all without any compromising with quality. Rockford Varnish Company products are made today under the same quality-minded supervision that prevailed over twenty years ago when our business was young.

To you, the manufacturer who seeks the ultimate in fine finishes for his product, we renew our pledge of "No Tampering with Quality"—and invite you to sample our products and try them under your own working conditions.

The
ROCKFORD VARNISH
Company
ROCKFORD, ILLINOIS

"NO TAMPERING WITH QUALITY"

time; of course, as previously stated, the first coat should be a light coat, and it should dry one half hour or longer before the second coat is applied.

The synthetic product has its advantages over the varnish type enamels in the baking field because light pastel shades and whites may be baked satisfactorily at a low temperature without discoloring. The range of colors obtainable in this line is the same as the lacquer enamel range, in which almost any shade of color may be readily procured.

The synthetic family is a happy medium between varnish and pyroxylin. It dries more rapidly than varnish and has the same type of build but does not dry as fast as pyroxylin.

This table will give a rough idea in brief of the characteristics of the synthetic resin materials as compared to pyroxylin.

Feature of finish	Synthetic	Pyroxylin
Adhesion to bare aluminum	Very good	Poor
Hiding	Very good	Good
Build	Good	Fair
Gloss	Very good	Fair
Brushing properties	Good	
Spraying properties	Good	Good
Print resistance	Very good	Very good
Fading chalking	Very good	Good
Heat resistance	Very good	
Alkali resistance (air dry)	Fair	Very good
Alkali resistance (baked)	Good	

Finishing Carved Oak

By
E. C. H. ROTTMANN

What the finishing requirements are for genuine hand-carved oak, what materials and supplies to use and how to use them to produce economically a finish that radiates dignity and elegance

"The finishing of a hand-carved mantle shelf forms the nucleus of this article, which I hope will in some measure convey the idea of economical finishing in this branch of artistic work, as the finishing time consumed did not exceed three hours."

Edward C H Rottmann

IT HAS OFTEN been said that "history repeats itself," and this axiom bears out my assertion that carved woodwork is fast coming into favor again for the finer residences and public buildings. In keeping with this, no modern building seems to be complete without these bits of carved pieces in evidence.

Many of the finer and costlier jobs of woodwork that go through our plant carry more and more carvings as the time passes. My remarks here do not in any sense deal with what is known as the commercial machine carving, but rather with the genuine strictly hand-carved article. To illustrate, I have in mind a residence job for the southwest, which recently passed through our finishing department. A drawing I have shows a hand carved mantel shelf which was part of the woodwork on this particular job.

What to Strive for

To properly finish carvings, we must consider that this high class work is expected to endure

The above are specimens of three types of ZELACTITE, which is furnished in various sizes and effects.

ZELACTITE

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(the owner has this thought in mind when he orders it), that it will pass on down through the ages, so naturally the finish must be of a quality that will endure in keeping with the wood and the craftsmanship. With this thought in mind, I will confine my remarks to the finishing of this highly carved mantel shelf of oak.

In a finish of this type it must be remembered that no materials should be used that produce a glossy film, as this finish, when completed, must be of the quiet subdued tone, and yet have an appearance of dignity and elegance in harmony with the surroundings, which are never of a flashy nature.

Materials, Supplies, Operations

Also, each coat of finishing material, from the primary to the last coat, should be non-fading, moisture proof and durable; the slightest tendency toward any built-up film or to gloss, of course, must be overcome.

The finish desired on this mantel had the appearance of having only been stained when completed—yet it had two coats of moisture-proof material over the stain—and it was back painted with pure lead and oil.

The sponging coat was applied with a wool sponge, which is better than the coarser grass sponges, because with it a more even and lighter coat is applied and there will not be any excessive raising of the grain in spots, caused by uneven sponging.

The light sponge coat was lightly wipe-sanded with No. 4/0 sandpaper, after which a coat of brown oak, acid-stain was brushed on. This stain was of the proper strength and was applied sparingly in order to avoid flooding the surface. It was blended evenly with a blending brush and, since no high-lighting was required, this blender distributed the stain evenly and uniformly in the recesses as well as the raised parts.

After this stain had dried, a coat of dull satin lacquer was sprayed on, and when this coat of lacquer was dry, the surface was lightly steel wooled and dusted thoroughly with an air duster. If any shading or toning up is required, it can be done at this time. Then a thin coat of French lacquer was applied. These coats produced a beautiful, soft, lusterless, "smooth-feeling" finish over a rough background.

This finish is extremely economical, but to the eyes of one not initiated it may seem to be a costly undertaking—a slow and tedious proposition—yet in truth it is quite the reverse. In fact, I hesitate to reveal in this article the small amount of time consumed in finishing this artistic mantel shelf.

Pyroxylin Manufacturing

Construction and operation of pyroxylin manufacturing plants—regulations of the National Board of Fire Underwriters, effective July 1, 1923. Copies may be obtained from the Board, 85 John St., New York City.

Modern Heating Catalog

A new catalog of the latest developments in modern heating has just been published by Jas. P. Marsh & Co., heating system and unit manufacturers, 2075 Southport Ave., Chicago. The edition contains complete data on each of the company's new systems and units, including a detailed description of the Marsh Weather Compensating System of Heating. Valves and traps, gauges and instrument panels of advanced design recently produced by the Marsh company also are illustrated and described in the catalog.

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Uniforming Color of Walnut and Fancy Maple

By
F. W. PURDON

Foreman finisher explains what methods he uses to stain sapwood in walnut to do a satisfactory job of uniforming the color; also how he finishes curly and birdseye maple

GIVING A THOUGHT to the manufacturing world today, we are impressed with the modern methods which are employed to increase production; especially has this been very pronounced in the wood finishing branch of industry. It has made its presence felt through the avenue of modern wood finishing materials. The manufacturer who would meet competition in this field today must take advantage of all these new discoveries such as lacquer, four-hour fillers, non-grain raising stains, and the modern spray methods. Still there are many troublesome wrinkles to be ironed out in the wood finishing game.

Walnut is a wood which is very much in vogue at the present time and to finish this wood, in a uniform color, furnishes quite a problem for some finishers because generally it contains a percentage of this sapwood. It is almost impossible in the veneer matching department to eliminate this sapwood entirely, so it becomes a problem for the finisher to solve to the best of his ability.

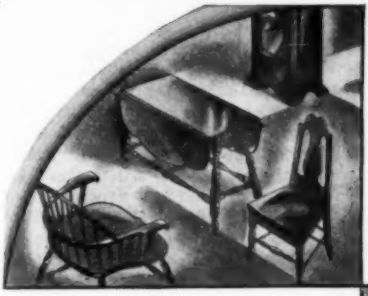
On a well finished piece of walnut, which originally contained a large portion of sapwood, it is impossible to tell just what portion was sapwood and what portion was heartwood. There are several methods by which this sapwood may be treated to produce satisfactory results in the finished product.

The first method is to stain the sapwood with a stain that will bring it to the exact color of the heartwood. Almost every finisher will find this easy to do, after a little experimenting with the right colors, for this is really a delicate color matching job. The colors needed for this are nigrosine jet black and azo rubine. Let the finisher who is interested in this problem take one quart of hot water and into this dissolve one dram of nigrosine jet black and one scruple of azo rubine.

With a small brush apply a coat of this to the sapwood. The stain, being a water stain, will raise the grain of the wood, this necessitating a slight sanding when dry. Therefore the stain should be a little darker before it is sanded, as the sanding will cause it to lighten up. After the sap stain has been sanded, the surface is ready for the next operation, which may be filling or a staining coat. It is difficult to give a set formula for this sap stain because of the wide variation in walnut veneers—and whether rotary cut, sliced or butt.

Use Shading Spray Gun

A later method of treating this



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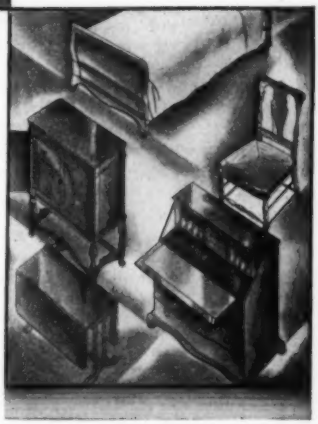

Lacquer finishes for modern furniture receive much abuse. Whether they stand up under this or not depends largely upon the lacquer ingredients. From the sanding sealer to the final finish, high gloss or flatted as you prefer, Teglac is the logical choice.

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sapwood is to use a shading spray gun and a non-grain raising acid stain. It is possible to do a real clever job on sapwood by this method. The sapwood may be toned up to the color of the heartwood and blended in to match up perfectly. Walnut sap stain can be purchased ready made from any one of several advertisers in this magazine, but in an emergency I suggest the following: Use one quart of the proper reducer, which is made for stains by stain manufacturers. Into this reducer add from four to six liquid ounces of nigrosine jet black, and from one to two ounces of azo rubine. (Let me say right here for those who may not be acquainted with these non-grain raising stains, that they may be secured in a wide range of colors: nigrosine, buffalo black, acid yellow, wool yellow, acid green, crociene orange, resoreine brown, etc.) With the cup of the shading spray-gun filled with this stain, a little practice will make one very proficient in the art of staining sap walnut.

Shading Lacquer

Another method of successfully coloring this sapwood is with the shading spray-gun and shading lacquer made up to match the color of the finishing walnut. I have mixed this shading lacquer by using a black lacquer, bright red lacquer, some clear lacquer and reducer. First I reduced the clear lacquer in about this proportion: one-third lacquer, two-thirds reducer. Into a gallon of this reduced lacquer I added about 16 liquid ounces of black lacquer and 12 liquid ounces of bright red lacquer.

After the wood surface has been filled and the filler has become dry, fill the shading gun with this colored shading lacquer, and experiment on a few of these sap streaks. You will be surprised at the wonderful camouflage job you will be able to produce on this troublesome sap. This type of shading lacquer may also be used to tone up the rest of the portions of the wood, which has run light in color, thereby producing an even, non-fading color with a minimum amount of labor. Some finishers use oil stains to tone this sap, but with ordinary straight oil stains the color will soon fade, leaving the sap almost its natural color, if exposed to strong sunlight.

For a very fine grade of work I advise staining the sapwood first with a water stain; then, after the work has been filled, use the shading lacquer. With this combination, your difficulty with coloring or blending of sapwood becomes a lost worry. All that is necessary is the patience to do a little experimental work to obtain satisfactory results.

Finishing Fancy Maple

Another wood, which is becoming quite the vogue, is curly maple. This in some respects offers a problem to the finisher in obtaining an even color. Maple is being dressed today in some very pleasing colors, and it is here that the shading lacquer again becomes the controlling factor—to eliminate a source of worry.

To bring out the beauty of curly maple, I generally use a solution of bi-chromate of potash, made up in the following manner: two drams of bi-chromate of potash to one quart of hot water. Stain the maple with this solution, applied evenly. After the stain has become dry, sand lightly with fine sandpaper, No. 4/0 garnet. Over-

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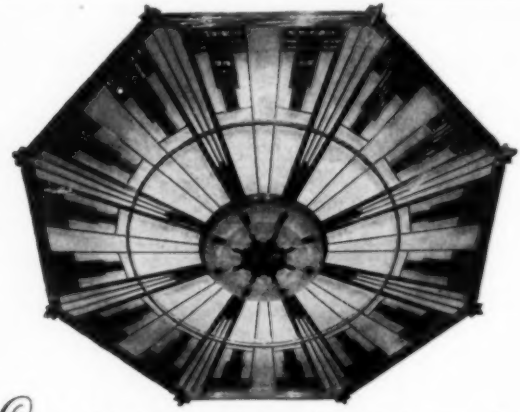
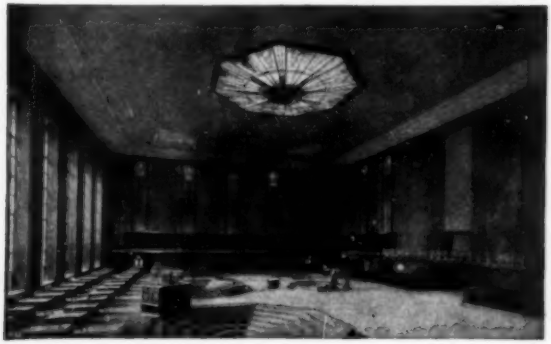


Close-up of the huge chandelier in the Main Trading Floor of the new Chicago Board of Trade



The Main Trading Room, showing the great chandelier.

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The Victor S. Pearlman Co., makers of the lighting fixtures, say: "We wanted the best in the world, so we used Egyptian Lacquers."

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coat the entire work with a shading lacquer of amber color or a red brown. With a little practice and the proper color in shading lacquer, one will be surprised at the beautiful results it is possible to obtain with this method.

Recently we made a large order of goods of curly maple for a very prominent concern in New York City, using the described method with very beautiful results in the finished product.

Staining; Shading

Beside bichromate of potash as a stain for the brown shades, subsulphate of iron one dram, nigrosine black one scruple, water one quart make a very fine stain for the gray shades, which are becoming popular in curly and birdseye maple. This is also toned with shading lacquer. The chemical stains which I have mentioned here are for the purpose of bringing out the beauty of the burl in the maple. The color of the piece of work is controlled by the color of the shading lacquer used.

In using the shading lacquer to color maple, please understand it must be applied with a small shading spray gun, and only a mist coat used. The final product will be strikingly pleasing, having a clear transparent color. The shading lacquer, being applied very thin and to the raw wood, there is no danger of its chipping or wearing off. It will be as satisfactory as a stain in this respect.

The shading lacquer is not affected by the tanic acid of the maple as is water stain which contains certain chemicals. The color will be uniform on the entire piece of work, large or small. All that is necessary is a little skill in the application. Please understand that shading lacquer is not opaque if used properly.

Toy Golf Stick Finish

The following method produces an attractive and exceedingly economical finish—developed specifically to toy golf stick handles but applicable to other similar articles.

The handle is given one coat of a transparent lacquer stain. This may be prepared by dissolving a small quantity of yellow and orange spirit-soluble dye in alcohol and adding it to a good grade of clear dipping lacquer; or, better still, adding a small amount of one of the newer quick-drying stains or non-grain-raising stains of the desired color to the clear lacquer.

The handles may be dumped in bunches into the dip tank and withdrawn singly. It may be necessary to vary the consistency of the lacquer by adding thinner if the lacquer has a tendency to bubble on the work.

The handle end is then dipped into a medium brown solid covering dipping lacquer, for about 6 or 8-in. This produces the effect of a leather grip on the handles. Other colors will produce attractive effects.—Bernard Sanderson.

More Synthetic Resin

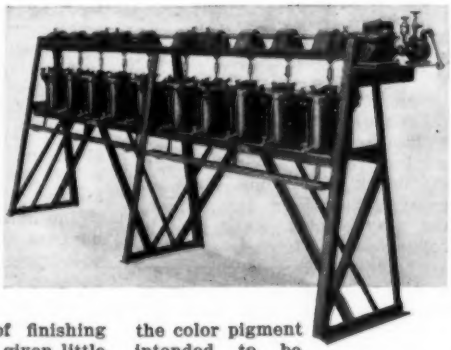
The expansion of the synthetic resin industry in this country within the past few years is shown by figures recently issued by the U. S. Tariff Commission. These show that sales of synthetic resins rose from 13,084,000-lbs. in 1927 to 20,778,000-lbs. in 1928, and then to 30,263,000-lbs. last year. Last year's production was 31,471,000-lbs.

The bulk of present day resinous materials are made from phenol and formaldehyde, but the quest for cheaper raw materials and processes has been pursued with energy in other lines, and recently a corporation has been formed for the purpose of utilizing a process by which plastic resins will be manufactured from sugar.

How to Maintain—

Color Uniformity On All Production Jobs

By
W. J. MISKELLA



What causes off-color jobs in production touch-up and repair work, how to maintain uniformity in color mixes, and where the new equipment illustrated and described here fits in advantageously and profitably in industrial finishing

THE AGITATION of finishing materials has been given little thought in the past. It is a very difficult task to properly agitate heavy pigmented materials by hand, since the mixture of the liquid and the solid portions is a mechanical one at best, and far from some of the colloidal solutions which are being marketed. Of course, the latter go through some very exacting grinding operations in which very elaborate and expensive machinery is used.

When a pail of paint or lacquer is mixed by stirring it with a stick, the mixing can only be a makeshift job at best, since experience teaches that only after hours of constant application of the machinery used in the mixing process may one expect satisfactory results. The change of colors is a serious one where there is any attempt at all to adhere to certain shades or tints. Obviously this status cannot exist unless all of the color pigment intended to be used is intermixed so that uniformity will prevail in each square foot of the material that is applied.

In the outfit illustrated above there is included various mechanical means for mixing finishing materials. Some of these have been used in connection with larger and more pretentious installations, and it is perfectly natural that there should be something of this nature to maintain the uniformity of color, especially that needed in touch-up work—and particularly where there is extensive use of a large number of suction-type touch-up spray guns.

The equipment shown here goes hand in hand with that used in the storage room, if one is to be assured of a proper color match. Otherwise, in the use of finishing materials—particularly lacquer—if one batch is thoroughly agi-

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tated before application by the pressure method, and the other is not uniformly agitated, one cannot expect a satisfactory color match when the materials are applied by the suction-type spray method.

Some finishers are likely to look upon this idea as immaterial, but the fact that spray equipment manufacturers have found it wise to spend their time and money to design such an outfit surely furnishes evidence that there is a field for it.

Hardly a week goes by that something of value is not produced which will aid the finisher to do more effective work or obtain better results with the particular materials he uses. This time it is a special mechanically agitated rack for the use of those charged with the task of touching up defects and making repairs incident to finishing on production lines in automobile plants.

In this equipment we see another application of the air-motor. Connection is made to a compressed air line in the plant, and the power needed for agitating the entire battery of colors is at once available.

It is interesting to note that a departure is made from agitating materials for pressure application, since the containers shown are of the gravity type. Each one is equipped with a specially designed cock so that as much or as little of the finishing material as is wanted may be drawn off and placed in the small capacity suction cup of the spray gun used for applying it to the surfaces needing touching up or repairing.

A drain board is provided for the drip from these cocks, so that there will be no mess on the floor below them. The outfit is perfectly noiseless mechanically, because of the use of a highly efficient and carefully designed speed reducer. Means for quickly filling the container units is provided, as is also the addition of more units. This is accomplished by furnishing a motor of ample power to drive more tanks should they be needed, as well as provision in the original design to accommodate an additional battery of five tanks on the opposite end of the drive shaft.

The rack for holding the outfit is built strongly enough to hold the full capacity of ten gallons per section without vibration. It is interesting to note also that this equipment provides an excellent place for storing touch-up materials, and in fact ordinary finishing materials where a number of different colors are regularly used.

Fire hazards are reduced and better housekeeping methods are encouraged through the use of this system. It is easily possible to remove any one of the pressure tank units for cleaning.

By using these closed containers there is a saving through the reduction of loss in material that is over exposed to the atmosphere which naturally changes its chemical form. Also, one avoids the waste of the material that adheres to the sides of open containers.

The containers in this outfit are high enough off the floor to be especially convenient for the spray operator. It is possible that in some industrial plants, it may be advantageous to make the outfit portable and arrange for connection to compressed air outlets placed at convenient locations. In that case, it is advisable to mount, on one end of the rack, an air transformer consisting of a

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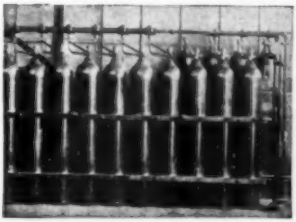

gauge, moisture eliminator and oil-and-dirt extractor. Also, it may be wise to provide hooks or holders for the spray guns to rest in when not in use.

Finishing Furniture Woods

Today the furniture finisher must understand many different cabinet woods, and the proper colors that go with them for purposes of beautification. Regardless of what kind of wood a man is finishing, he must finish it to harmonize with other pieces in the suite, otherwise he will have a job that will be of no value, because now furniture buyers are critical about color and finish.

There may be five or six different woods included in a dresser or a buffet, but when the article is finished the different woods must harmonize satisfactorily with each other to give an attractive appearance to the piece of furniture. Of course, the finisher frequently gets the blame if a suite doesn't look so good and is not very salable, when sometimes the fault is in the design; a change in design would make the suite a good seller.

The different woods that a finisher deals with today must be beautified. Some woods must be stained; take ash and quilted maple for example: these can be beautified to a great extent by adding tints in certain places, especially on the quilted parts of the maple. Afterwards, if this tinting is done right and washed out to a feather edge, an observer can hardly tell that it was placed there—it appears that the growth was of that nature; this artistic treatment surely brings out the beauty of the wood.

It is my belief that any filling of maple represents a needless extra operation, as the pores of maple are very small; they can be taken care of effectively by the sealer or first coater. Some finishers declare that filling gives maple a better color. Of course, if the trade calls for filling, it must be given to them, but usually a finisher can arrange to make the stain do the job and save filling operation.

Gum woods that do not match the adjoining walnut or mahogany veneers can be matched up at the spray booth by a skillful shader, using a shading gun.

With the quick-drying fillers, stains, lacquers and varnishes available today, a foreman finisher can certainly put his work through on a production scale; he can do in a day what ten years ago represented a week's work. Just as fast as the finishing materials and equipment have advanced during the last ten years, just that fast has the public advanced in its education and demand for finish and color. Let's try to keep ahead of the public in our finishing room, and strive to produce still better finishes.—L. P. Altland.

More Employment in Furniture Industry

During the past month, the employment service conducted by the Furniture Club of America (666 Lake Shore Drive, Chicago) for the benefit of the industry has received more requests for men than during any similar period in the past two years, according to George W. Rowell, Jr., manager of the club.

The employment service has been conducted by the Furniture Club ever since Mr. Rowell became manager. There is no charge for its use.

"While my guess as to future business conditions is no better than that of anyone else, the fact that employers are adding to their staffs is an encouraging sign, indicating at least a temporary improvement," Mr. Rowell declared. "The requests have frequently been accompanied by letters telling of increased business during September."

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Moving Parts Mechanically in Finishing Process

By
P. C. BARDIN

Some specific information about what a number of the best equipped manufacturers are using in the way of mechanical handling and conveying equipment, and how they have it arranged and operated to effect lower production costs in their finishing departments

MATERIAL kept moving costs less! This is the universal law of industry. Today, more than ever before, there is a vital need for reduced manufacturing costs. Competitor's salesmen are paradoxically cutting prices with one hand and pointing to quality with the other. The buyer's slogan is, "Meet the price with better quality." There is only one way open to the plant executive to meet such a situation: Stringent savings all along the line and revolutionary changes in manufacturing, handling and finishing schedules.

Conveyors—those pace setters of industry—form a real and definite means of reducing handling and manufacturing costs. Even in the small and medium sized plants, where production is somewhat limited, there are types of conveyors and mechanical handling devices that will save time and labor. The cost of this equipment is surprisingly low when the results to be obtained are considered. A comparison of a few of the various types of conveyors and handling devices being used successfully in finishing rooms today follows.

Head ends and foot ends of metal beds on conveyor which carries them through two hooded tanks, one containing chemical cleaner and the other hot rinsing water.

Metal Cleaning

In cleaning metal products preparatory to finishing, the equipment should be adapted to both the nature of the product and the method of cleaning.

A manufacturer of metal beds is using a power belt conveyor which carries assembled head ends and foot ends down the assembly line, and delivers the pieces to the cleaning tank, at which point the pieces are automatically transferred to a triple chain conveyor. This conveyor carries the pieces

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Fact No. 1

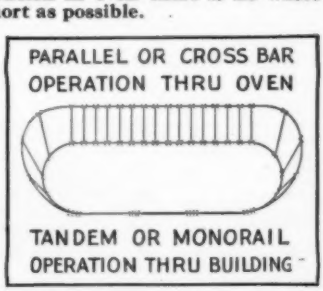
a substantial saving of valuable floor space

By using parallel or cross bar operation in oven there is no waste space and oven length is made as short as possible.

By using monorail or tandem operation outside of oven, material is quickly moved from one operation to another without taking up valuable floor space.

By dipping in a vertical plane small washer and paint tanks are used thereby saving floor space.

The combination of these three features along with others in a single production line assures a substantial saving of valuable floor space.

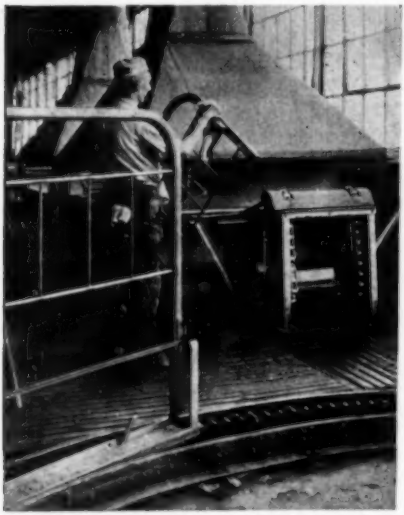


Write for full description of the advanced Condensveyor System.

NICHOLS PRODUCTS CORPORATION

12953 Greeley Ave., Detroit, Mich.

NEW YORK CLEVELAND CHICAGO PITTSBURGH PORTLAND, ORE.



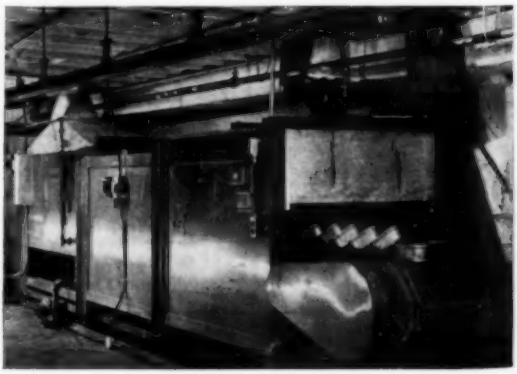
At discharge end of conveyor where a workman receives head ends and foot ends of metal beds after they have been through the chemical cleaner and hot water rinse tanks.

down into a tank of boiling alkali, then up, and again down into a tank of boiling water adjacent to the chemical tank. The conveyor ends at the discharge end of the clear water wash where the pieces are wiped off by hand.

In a well known automobile plant such pressed metal as fenders, guards, running board and radiator parts are placed on a power conveyor which is a part of a commercial washing and drying machine. This conveyor operates similar to that described above, excepting that after cleaning and rinsing, it carries the parts through an oven which thoroughly dries the surfaces and then delivers the articles to the dip tanks.

Another method of cleaning and handling steel stampings is the high-temperature oven through which a conveyor carries the parts. The oven is operated at approximately 1200°F. and is of such a length that about eight minutes is required for the parts to pass through the oven at a conveyor speed of 8-ft. per minute.

Where the pickling process is used for cleaning steel parts, the



Stamped sheet-metal parts passing through a continuous washing and drying machine. As the parts move through the first compartment they are sprayed with chemical cleaner; going through the next compartment, they are air cleaned with blasts of air; as a final step the parts enter a drying chamber where the last traces of moisture are removed in a temperature of 400°F. Elapsed time, five minutes, passing through a distance of 40-ft. at 8-ft. per minute.

SPEED

QUALITY

when you use

G-E-Glyptal

REG. U.S. PAT. OFF.

FOUR FOLD LIQUID ARMOR

There are nine G-E Glyptals; No. 1201 Red, No. 1202 Clear, No. 1206 Blue, No. 1209 Black, No. 1210 Brown, No. 1211 Green, No. 1212 Aluminum, No. 1214 Gray, No. 1217 Gray.

These nine are identical in all characteristics; the only difference is in the color.

Any one of these nine G-E Glyptals will do *any* or *all* of the operations mentioned—best. From the same container you can prime, size, seal and protect. Why stock several different materials?—Use G-E GLYPTAL.

General Electric has a new product ready for the market—G-E 1276 Glyptal Cement—"A good sticker and a sticker for good."

General Electric Merchandise Distributors everywhere can make immediate deliveries. Or write Section M-3410 General Electric Company, Bridgeport, Conn.

"FOUR FOLD"

Because Glyptal:

1. *Primes*
2. *Sizes*
3. *Seals*
4. *Protects*

GENERAL ELECTRIC

Glyptal

pieces are generally loaded into large monel metal baskets or trays which move along under an overhead track. The loaded baskets are moved forward by hand but lowered into and raised from the various tanks by electric hoist.

Conveyorized spray booth where parts are sprayed while passing through at the rate of 7½-ft. per minute.

Finishing

Dip finishing may be accomplished automatically by constructing long narrow tanks over which a monorail, trolley-type conveyor moves, carrying parts through the dip material. Parts are lowered into and raised from the tank either by a lowering or dipping device, or by depressing the monorail for a sufficient distance immediately over the tank. On leaving the tank, the excess material drains off as the parts move toward the oven where the finish is baked.

The metal bed manufacturer mentioned previously in this article is spray finishing beds which are carried through the spray booths at the rate of 9-ft. per minute. This conveyor is of the single-chain type mounted on the floor. Bed parts are carried forward on carriers propelled by lugs on the chain conveyor. Two spray booths, adjacent and facing in opposite directions, are used to spray each coat as the bed moves along. This is done of course, to prevent the two operators from spraying each other with the material being applied. On leaving the second spray booth, the spray-finished bed is carried through an oven.

Parts that can be suspended from hooks, or which are of such a nature that they may be placed on rod holders, lend themselves readily to the single, overhead, chain-type conveyor that passes through the various spray booths and ovens. Such a system permits the floor space to be used for other work, as this type of conveyor can be raised as high as necessary, excepting at those places where work is to be performed on the parts while they are moving forward.

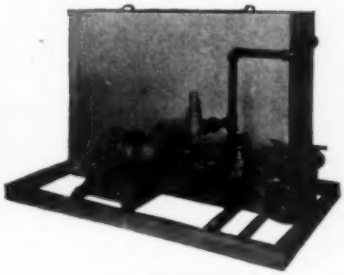
Baking

Of course the type of conveyor used in dipping or spray finishing is obviously the same as used in baking the finish. There are two distinct methods of exposing the parts to the heat of the oven for the required length of time. For instance, referring again to

Announcing

NEW DESPATCH FINISH CONDITIONING EQUIPMENT

FOR
LACQUERS
VARNISHES
ENAMELS



FOR
PAINTS
JAPANS
ASPHALTS

Pat. Applied For

Eliminate dirty and streaked finishes with this new Despatch Finish Conditioning Equipment. Action is positive. Results are guaranteed.

The new Despatch Finish Conditioning Equipment is a combination strainer and agitator in one—a revelation to users of dip tanks and flow coating devices. Equipment is made in all sizes, for all shapes of tanks, and for all finishes.

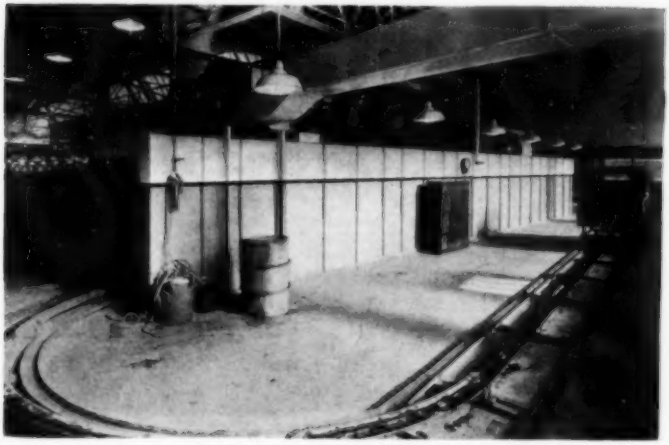
Write today for bulletin No. 96 which contains valuable and interesting information concerning the construction and operation of this equipment and how it overcomes difficulties in Finishing Departments.

DESPATCH OVEN COMPANY

622 Ninth Street S. E. Minneapolis, Minn., U.S.A.

Representatives in Principal Cities

Designers and Builders of Japanning and Enameling Ovens, Coil and Armature Ovens, Lacquer, Paint, and Varnish Driers, Drying Ovens of all kinds, special process ovens, Paint Tanks, Paint Tank Heaters, and Finish Conditioning Equipment.



Trackage and chain conveyor in automobile finishing room.

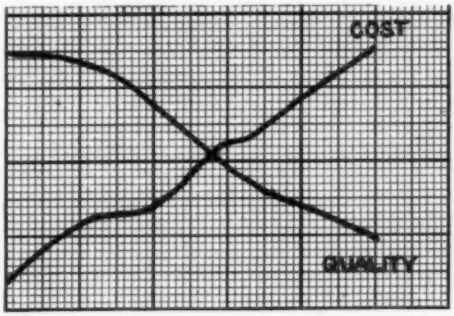
the plant producing metal beds, if these parts passed through the oven in a lengthwise position (position in which they are spray finished) at the rate of 9-ft. per minute (conveyor speed), to obtain a baking period of 3½-hrs. an oven 750-ft. long would be necessary. Naturally, this would involve a tremendous investment.

The method used by this bed manufacturer is to turn the beds from a lengthwise to a crosswise position inside the oven, raise the bed and carrier up off the moving chain and place them on free conveyor rolls. Then each bed entering the oven moves all of the beds that are inside the oven a distance equal to the width of the carrier on which the bed part is mounted. At the discharge end of the oven, beds are again turned to a lengthwise position and lowered to a point where the carrier is again propelled forward by the lugs on the moving chain.

By means of this device, a baking period of 3½-hrs. is obtained in an oven that is only 95-ft. long, and the entire operation is mechanical. Each end of the oven is equipped with metal doors, which open and close automatically to permit beds to enter and leave the oven without materially affecting the uniform temperature necessary to produce a satisfactory finish.

Another method of obtaining the required baking period—one particularly adapted to small parts such as those for scales, cash registers, adding machines, etc., which are suspended from an overhead chain conveyor—is to return the conveyor chain inside the oven a sufficient number of times so that, based on the average speed of the chain, the parts will "circulate" inside the oven for the required period of time for adequately baking the finish.

A nitrocellulose lacquer contains nitrocellulose dissolved in appropriate solvents and diluents.



Another "DANGER LINE"

Letting well enough alone

The "standpatter" and his conservative cousins may leave the room—this message won't interest them. And any other old fashioned gentlemen whose eyes rest here may well skip this page.

--BUT--

to that grand fraternity of progressives who want their quality and cost curves to meander north and south respectively, let us say just this—we have a knack of formulating custom-made lacquer thinners at ready made prices.

A copy of our latest brochure "11 Lacquer Thinner Problems" is yours for the asking—a veritable "bible" for the lacquer thinner user. Simply say on your letter-head, "Send that brochure!"

PIERCE & STEVENS,

Incorporated

Industrial Lacquers and Lacquer Thinners

721 Ohio Street **Buffalo, N. Y.**

Imitation Marble on Metal New Baking Enamel

Recently I have experienced the satisfaction of using a baking enamel (a synthetic enamel) which is particularly economical since it can be used with good results on the bare metal. As a matter of fact, when I used it over a primer or undercoat, it caused trouble such as checking or cracking. Even the white enamel covers bare metal satisfactorily in one coat. Baking it 1½ hours at 175° F. produces a tough, elastic film of glass like hardness. It adheres well to metals that are usually difficult to finish, and it can be either brushed or sprayed on the surface. Of course, the metal surfaces to be finished must be perfectly clean and dry before the enamel is applied.

An extra high quality finish can be obtained if desired, by spraying on two coats of the enamel, sanding between coats with No. 150 sandpaper and baking the second coat 1½ hours at 175° F.

I have used this finish in colors for production of a one-coat ground in the imitation marble finishes—for example, (1) white-veined verd antique marble, where the verd is similar to Egyptian green marble but somewhat more splotchy; (2) brocatelle marble where the ground color is a light warm yellow; (3) dove marble with a ground of warm gray (4) Florentine marble with a white ground, tinted with Indian red or Tuscan red. For tinting I use japan colors—never oil colors as the latter do not work well with this enamel.

The marbling (marble graining) can be done by an expert hand grainer, or it can be applied by a new print process. For a protective finish over this marbling, I suggest two coats of clear lacquer or two coats of Damar varnish—each coat of varnish to be baked two hours at 225° F.

For thinning the enamel, I prefer thinner purchased from the manufacturer, but in an emergency one can use a thinner made up of two parts benzol to one part naphtha.

To get the best results, I recommend that enough material be prepared to complete the job at hand, and that all spray equipment be clean and in first class working condition. In our work, we find that articles finished white with this material can be assembled with white porcelain finished pieces, and the difference can hardly be noticed even by a careful observer.—Geo. Moskos.

Lacquer was originally adopted to speed up production in an overcrowded finishing shop and in this respect it more than justified expectations. However, other advantages, such as ease of retouching, hardness and durability of finish, resistance to oil, gasoline, etc. were soon apparent.

"Daylight Walls with Hi-Lite"

The above words are the title of an interesting message in a small circular featuring the Hilo Varnish Corp.'s wall and ceiling enamels in both gloss and flat white—finishes which "adhere well to wood, steel, brick, plaster, concrete, stone, iron . . . . . washable and easy to keep clean."

Paint, Varnish and Lacquer

The total sales during June, as reported to the Department of Commerce by 544 firms, amounted to $33,845,557. Trade sales, $15,012,721; industrial sales $8,753,453; unclassified, $10,079,405. Total sales in May amounted to $40,538,723. In May, 1929, they amounted to $45,002,109.

JONFLEX

[Industrial Tape]

Brings both economy and added profit to industry . . . . . .

EACH day it becomes a little more difficult for industry to waste money and hope for success. Where masking or stenciling is a necessary operation in your business the selecting of the masking tape used becomes an important cost factor.

Today Jonflex is the accepted masking tape of industry because it has brought a new and higher standard of efficiency at a much lower operating cost.

Jonflex is the product of an organization that has made tape history. Its use has made the work of ordinary workers comparable to skilled craftsmen. It has a precision edge —it sticks where put regardless of solvents, it strips clean, it affords you one more opportunity to cut cost.

Have you seen the new Johnson's Tape Dispenser? Holds full size roll of tape up to 1¼ inches wide. Enables you to cut any length of tape instantly. Eliminates pre-handling —no waste.

Sample Roll Free!!

JOHNSON & JOHNSON, New Brunswick, N. J. I.F.O.

Please send free sample roll of Jonflex Industrial Tape and information on the Tape Dispenser.

Name _____

Company _____

Street and Number _____

City _____ *State* _____

New Materials and Equipment

Presenting briefly, certain outstanding features of new or improved materials, supplies and equipment which have been developed and made available for use in modern industrial finishing departments

Spray Painting Outfit

The Metal Specialties Mfg. Co., 338 N. Kedzie Ave., Chicago, announces the addition of a new, advanced Model 150 to the Presto line of spray painting equipment —electric powered, compact, ruggedly constructed, easily portable and equipped with a 2½-gallon

"With 2½ gallon pressure-feed material tank."

pressure feed material tank, which holds sufficient material to spray from 800 to 1000-sq. ft. A distinctive patented feature is the air-conditioning unit built into the hollow part of the handle.

The gun is of the pressure-feed type, with internal atomization in spray head which assures a steady, uniform spray of light or heavy materials the instant the trigger is pressed. Rebound, fog and mist are reduced to an absolute minimum.

The ring-valve piston-type compressor is directly connected to the electric motor, eliminating the necessity of belts, pulleys, idlers or gears. And a patented expansion air tank, built into the compressor head, eliminates all pulsation and bulky storage equipment.

The intake valve on the compressor is fitted with an air filter which traps all dust and foreign matter. This feature, in addition to the second air conditioning unit in the handle of the gun, permits only clean, dry air to pass through the spray gun head. Each outfit is regularly equipped with three outer spray heads for fan, round or angle spray.

Seals and Waterproofs Wood to be Finished

James B. Day & Co., 1872 Clybourn Ave., Chicago, Ill., announces the development of a new material "which drives the air out of wood, preventing the formation of bubbles in the finishing coat, and at the same time waterproofs the wood so that it will not take up moisture and so cause the destruction of lacquer coats applied over it."

According to the company's letter: "This sealer is applied to small articles by dipping and can be force-dried in a few hours, or allowed to dry naturally over night. It does not raise the grain of the wood, therefore requires no sanding or tumbling to cut

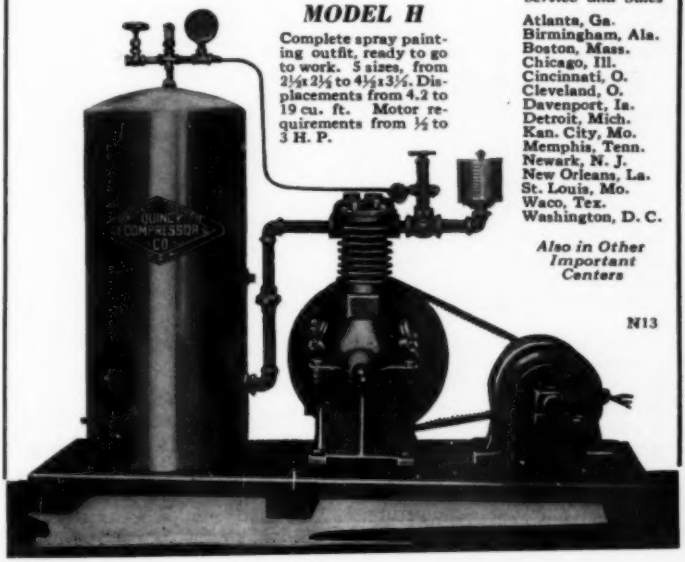
Compressor SATISFACTION

For paint spraying, you can't find an air compressor that is more dependable, more economical in operation, lower in upkeep or longer lived. Quincy Compressors are designed by compressor engineers of long experience and built by a manufacturer who has set his standard high. That is why Quincy Compressors have no time limit guarantee. They must satisfy— for all time.

QUINCY Compressors

305 Maine St.,
QUINCY, ILL.

Make your next compressor a Quincy, for economy and satisfaction. Write for complete details.



MODEL H

Complete spray painting outfit, ready to go to work. 5 sizes, from 2½x2½ to 4½x3½. Displacements from 4.2 to 19 cu. ft. Motor requirements from ½ to 3 H. P.

Service and Sales

Atlanta, Ga.
Birmingham, Ala.
Boston, Mass.
Chicago, Ill.
Cincinnati, O.
Cleveland, O.
Davenport, Ia.
Detroit, Mich.
Kan. City, Mo.
Memphis, Tenn.
Newark, N. J.
New Orleans, La.
St. Louis, Mo.
Waco, Tex.
Washington, D. C.

Also in Other Important Centers

N13

down raised fibers. The sealer penetrates the wood even better than linseed oil, and has the advantage of taking succeeding coats of lacquer without trouble.

"On larger articles that need waterproofing, this sealer may be applied by brushing on a heavy coat, which is allowed to penetrate thoroughly. It may be reduced with V.M.P. naphtha for better penetration, and this is a good point to observe when using it on hardwood. The sealer is especially effective on birch, maple, poplar, basswood, gum and pine.

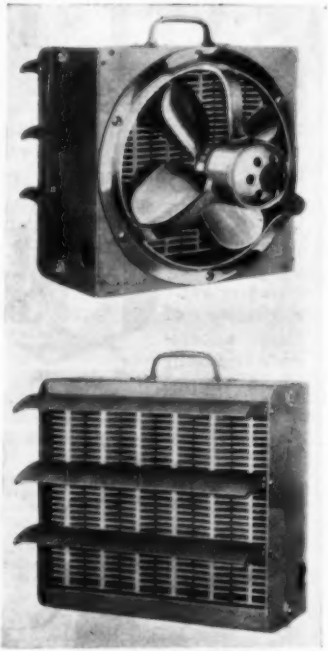
"This type of sealer should not be confused with the new sanding sealers or with spirit first coaters. It will not raise the grain; it waterproofs; it solves the problem of durability that finishers have had to contend with in lacquering handles for kitchen utensils. Usually there has been some way for water to seep into the wood, which, of course, would swell and crack the lacquer finish. The same is true of fishbaits, and in a different way, with such surfaces as tops of kitchen tables."

Portable Electric Heater

The American Foundry Equipment Co., Mishawaka, Ind., has recently placed on the market a new type electric space heater for industrial and commercial heating needs.

This unit combines the characteristics of both the steam unit heater and electric heater into one improved device. Its construction is simple. Special alloy heating strips are cast integrally with composite fins of aluminum alloy, making up into a single smooth casting that will allow an uninterrupted flow of air through its channels.

Castings of this type are then assembled in suitable number and size into a cabinet, back of which a fan operates to circulate a current of air through the heated fins and out into space where heat is desired. The heater can be used for permanent installation or as a portable heating unit.



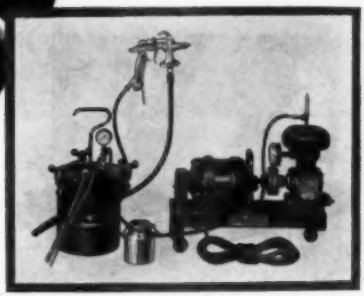
Front and rear views of new portable unit heater.

Strainer-Agitator Apparatus Improves Dip Finishing

In order to maintain uniformity in the cleanliness, consistency and pigmentation of finishing materials placed in service in dip-

The Heart of Presto

SPRAY FINISHING OUTFITS



The heart of every spray finishing outfit is the gun. And that's where Presto is many steps ahead of competition. For the famous Presto Model 95 shown above, is:

1—A pressure feed gun. It assures a steady, uniform spray of light or heavy materials the instant the trigger is pressed.

2—The perfect internal atomization of materials in the spray head reduces rebound, fog and mist. There are no split sprays.

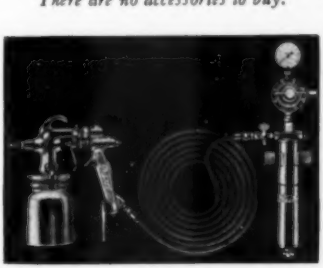
3—The size of spray and amount of material applied can be controlled directly from the trigger by means of a specially designed needle valve.

4—An air conditioning unit built into the handle, permits only clean dry air to pass through the gun and the valve which regulates the flow of air is controlled directly by the trigger action.

5—Gives perfect atomization and application of materials of all consistencies — from the lightest stains to heavy lead paints and enamels.

The Presto Model 95 can be used with any compressor delivering 2 cu. ft. of air or more per minute at 35 to 50 lbs. Price $25.00. Or you can buy it with the complete outfits shown to the right. Send the coupon.

New Presto Model 150 Spray Finishing Outfit for production work in industrial plants. Furnished complete, as shown, with 2½ gallon pressure feed material tank. Price $169.50. There are no accessories to buy.



Presto Model 95-OC. Furnished complete with pressure feed spray gun, quart clamp-on container, air conditioning unit, pressure regulator and gauge, and 25 ft. of rubber air hose. Price $47.50. No accessories to buy.

METAL SPECIALTIES MANUFACTURING CO.
338-352 N. Kedzie Ave., Chicago

Please send me complete details on Presto Spray Finishing Outfits for industrial use.

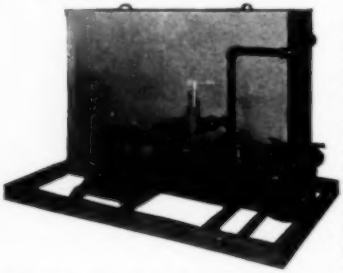
Name.....

Address.....City..... .....State.....

IF—10

ping tanks, engineers of the Despatch Oven Co., 622 Ninth St., S.E., Minneapolis, Minn., have designed, built and perfected a new finish-conditioning system.

According to the company's announcement: "While of a new and radical design, the system and equipment has been thoroughly



tested in the Despatch Oven Co.'s own laboratories and also in many finishing departments of progressive industrial firms throughout the U. S.

"The new Despatch finish-conditioning equipment includes a combination strainer and agitator which has been compactly designed into a single portable unit. The finish is taken from the dip tank or flow coating device by a specially designed rotary pump, which is driven by an electric motor. This pump forces the finish through the Despatch strainer specially arranged for this process.

"After the finish is thoroughly strained, it is forced back into the dip tank or flow coating device. This cycle is continuous and equipment is usually arranged so that all of the finish in the tank is passed through the strainer once every five to ten minutes. This assures clean finishes at all times and maintains a constant viscosity.

"In addition to the equipment removing foreign substances from the finish, it acts also as an agitator. The constant circulation of the finish, due to the action of the pump, keeps the pigments uniformly distributed and eliminates the possibilities of securing off-color and streaked finishes from this cause.

"This unit is provided with an indicator which tells the operator when cleaning of the strainer is necessary. The cleaning operation is simple and requires only a few minutes. The top of the strainer unit is taken off after releasing toggle bolts; then the strainer, with all foreign matter inside, is lifted out, emptied, rinsed, and placed back into the unit. The top or cover is fastened into place again with the toggle bolts and the system is ready for operation. There is no necessity for shutting off the system when cleaning, as by-pass valve takes care of the finish during this period.

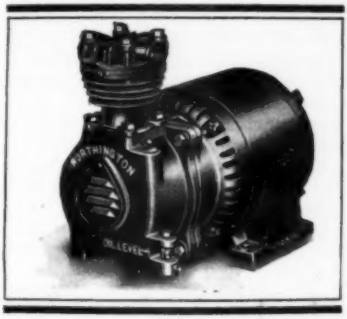
"The equipment is arranged for any size or shape of tank and for all finishes."

Du Pont's DuLux

A new product, known as "DuLux," which is expected to prove of unusual significance in the paint and varnish business, is announced by E. I. DuPont de Nemours & Co. It is the result of several years of research work on the part of DuPont chemical and technical staffs to impart some of the outstanding advantages of Duco to finishes of the paint and varnish type.

It is stated that the product is based on a new vehicle or film-forming material that is a specially developed synthetic chemical compound exceptionally resistant to disintegration, differing radi-

Steady pressure ...clean air



...get it with a Worthington *Monobloc Compressor*

THE Monobloc Compressor, Worthington's latest contribution to small compressor design, is ideally suited to spray painting work.

Compact, quiet, reliable, it is the product of an organization with forty years experience in compressor building, and embodies many features found in the larger Worthington units .... including Feather Valves and Timken Roller Bearings.

Here is a piece of modern equipment, built to render years of dependable service and to cut the cost of your air supply. It is sold by leading machinery supply houses.

For complete description, ask for Specification L-621 S1.

PUMPS
COMPRESSORS
Stationary and Portable
CONDENSERS
and Auxiliaries
DIESEL ENGINES
GAS ENGINES
FEEDWATER HEATERS
WATER, OIL and GASOLINE METERS
MULTI-V-DRIVES
CHROMIUM PLATING

Literature on request

WORTHINGTON

WORTHINGTON PUMP AND MACHINERY CORPORATION

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R-53

Branch Offices or Representatives in Principal Cities of all Foreign Countries

cally in this respect from the natural oils and resins generally used in the manufacture of paints, varnishes and enamels.

According to the company's announcement: "Its drying time is much shorter than that of ordinary finishes, thus greatly reducing the time during which freshly coated surfaces are subject to marring by insects or dust. It is also unusually resistant to rain damage during the drying period. Exacting laboratory tests have been confirmed by thousands of panels exposed to the elements in various sections of the United States, and indicate that the new product provides surface protection for approximately twice as long as ordinary finishes."

DuLux is now available for industrial uses, including the finishing of machinery and the coating of structural steel, bridges, freight cars and other uses where resistance to weathering and corrosion is required.

Let There Be Light!

Light makes for cheerfulness and contentment; it helps workers to do better work in less time; it influences greater cleanliness in factories and public places.

Daylight is a free gift of Nature. We have it 365 days in the year. Wake up that daylight with suitable white paint or enamel and derive the greatest benefits from Nature's gift. In bright workrooms, accidents are fewer. One insurance company estimates that 24% of all industrial accidents are due to lack of sufficient lighting.

A white finish on your walls and ceilings will distribute the daylight from your windows to every part of the room. Measured tests show that a good white finish reflects 84% of the light reaching it. Spread white finish on your ceilings and walls. Your lighting costs will be lessened and the light from your fixtures will be better diffused and more efficient. —Hilo Varnish Corp.

The refinishing of private cars in lacquer has now become general, and paint is seldom used except where the lowest possible cost is more important than appearance and performance.

No painter would expect a brittle furniture varnish to be as durable over wood on outdoor exposure as a long-oil finishing varnish, yet this is just what many have expected of lacquer.

SAN-ITAI-RIE FILLER

Pat. No. 1658605

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Manufacturers in all wood-using industries find SAN-ITAI-RIE FILLER unsurpassed in filling cracks, worm holes, knot holes, open joints, dents, pitch pockets, etc., and through its use are able to send out their products without a flaw.

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Made from lacquer solvents and lacquer gums, Sealacquer is a quality product through and through.

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Questions and Answers

This service department is conducted to meet the reader's need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer any further comments, or recommendations pertinent to subjects mentioned

Antique Maple Finish for "Spool" Beds

In finishing our spool beds we are having trouble in obtaining an attractive finish. Our designs are reproductions and are all hand turned from soft maple, tupelo and sap gum. We want a soft satin antique finish that is in keeping with pieces of this kind—honey, autumn and brown maple.

The process now used includes an oil stain, followed immediately with a paste wood filler dissolved in leptyne or turpentine. This is allowed to dry 12 hours, and then the surface is given three coats of shellac—rubbing with fine steel wool between coats. The last coat, after the surface has been rubbed with steel wool, is finished with a floor wax. Are there any changes that you would make in the above process that would improve our finish?—E. E. B. Co.

In place of using an oil stain which, in the mahogany shades, is sure to fade, a water stain or one of the new type non-fading, non-grain raising, quick-drying stains should be used. It is necessary for the water stain to dry over night, after which it must be sanded to secure a smooth finish. The later types of stain, however, may be recoated within less than an hour. They will not raise the grain and will not fade.

We suggest that the paste filler be entirely omitted, since the grain of maple or gum may be satisfactorily filled with the finishing coat.

For the second coat we recommend either shellac or sanding sealer. Shellac will give a satisfactory result if applied in a fairly thin coat, but sanding sealer will also give a satisfactory finish and does not require much sanding. If shellac is used, we recommend two coats; for sanding sealer, one coat will be sufficient.

Over the sanding sealer, we believe the best results would be secured by applying two coats of a heavy-bodied clear gloss lacquer, to be followed with a flat lacquer of the sheen required to make the proper antique effect. Flat lacquer may also be applied over the shellac. In any case we believe lacquer is preferable to wax for this purpose, since it gives a very durable finish and does not collect dust or grime, as a wax is likely to do.—James B. Day & Co.

The process that E. E. B. Co. now uses is all right provided they let the oil stain dry over night and fill with paste wood filler the next day. If paste wood filler is used over oil stain, before the stain has had time to dry, it will pick up the stain when the filler is cleaned off, causing a blotched and spotted surface.

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Metal Finishes
Beautiful Decorative Transparent Colors are obtainable by mixing into Clear Prismlac No. 23 small quantities of—
TINTING PRISMLAC
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CLEAR PRISMLAC WOOD SEALER No. 28
COLORED PRISMLAC WOOD SEALERS
Clear or Opaque Sealers which provide a smooth undercoat and background for Clear Prismlac No. 23
Top Coat Lacquer
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Adds lustre and durability without disturbing the crystal pattern of CLEAR PRISMLAC No. 23
May we suggest how your finish may be improved with Prismlac?
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This background is a photographic reproduction of M & W Prismlac

Also, I suggest that this concern use naphtha or benzine for cutting instead of leptyne or turpentine; and that they use lacquer sealer as it gives an excellent smooth surface, is durable, comparatively inexpensive, and it "sands" and "steel-wools" easily and economically. Then wax this finish the same as mentioned in the question.—T. R. Nail.

Vapor Degreaser Cleans Fuel Oil Tanks?

I am interested in the "Process for Degreasing Metals" appearing in the "New Materials and Equipment" section of January issue of INDUSTRIAL FINISHING, on pages 92, 95 and 96. Could this vapor degreaser be used in fuel oil tanks for cleaning purposes, and what danger if any would be involved? —E.A.N. (Paint department foreman of a large shipbuilding and drydock company).

To date we have not gone into the development of the degreaser for fuel oil tanks. We are interested in knowing what the possibilities are in this field and would appreciate your advising us in just what condition these tanks are, what position they are in and just how the tanks could be handled.

As far as any danger in the use of the solvent is concerned, there is no danger whatsoever.

We are sending you a general description of our process together with a circular showing the small tank that has been developed, and which has been found effective for parts that can be submerged in a tank of this type. This will give you some idea as to what the process consists of and what has to be done in order to produce results. The main idea of the process is to condense the clean solvent at all times on the cold surface. This removes the grease regardless of the type grease or the thickness of the coating. As far as we see now it seems to be entirely practical for the degreasing of the tanks, but if you will give us some idea of the general conditions, it will help us to form some conclusion as to what could be done with your particular problem.—Carrier Engineering Corp.

What Causes Blushing?

In hot humid weather, we experience considerable trouble preventing the "blush" on colored lacquer work, and in some cases we have had to stop operations entirely. We believe that the article in the September issue of INDUSTRIAL FINISHING on "Filtered Forced Air Speeds Drying in Finishing" might solve the problem, in which case we would be glad to learn more about the air filter suggested.—I. S. S. S. Inc.

Probably you understand that what causes blushing is that too rapid evaporation of the solvents in the finishing material lowers the temperature of the air immediately above the lacquered surface, and the cooler air precipitates moisture on the finish.

To overcome this difficulty, it is necessary to use high-boiling solvents in the lacquer, because these solvents dry more slowly than the ordinary solvent used. If high-boiling solvents were to be used all the year round, it would be necessary to increase the prices of lacquers because this type of solvent is more expensive than the lower boiling

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NO BAKE

We are anxious to put three samples in your hands. Each is a one-coat application of an economical, new material on: (1) COLD ROLLED STEEL; (2) BRASS; (3) ALUMINUM.

Once you have these metal strips you can bend, twist, fingernail them to your heart's content. You can blank and form them, and your own testing will demonstrate the remarkable adhesion.

By standardizing on three tones and lustres we have reached a production volume that shrinks the cost of quality. Furthermore, there is no waste with *Flexible* Blue Knight BLAX. They come to you ready-mixed for spraying (dipping or coating).

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Our answer to your specification for a perfect undercoat and sealer - - - free from tack . . . sands sharp in 10 minutes without heating up . . . does not roll off nor gum the paper . . . will not effect stain or filler nor raise the grain . . . prevents pinholes . . . recoat in less than one hour . . . will not blush, bloom, nor blister under the most trying weather conditions . . . used under varnish or lacquer . . . is waterproof, sunproof . . . harder and more durable than the usual coating materials . . . produces more body . . . more economical and price steady . . . uniform quality . . . mild odor and applied as furnished.
Doubtful? Try it! Order 5 gallons at the drum price, give it a thorough test. If it doesn't prove satisfactory, return unused portion for full credit.
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LACQUERS
VARNISHES
ENAMELS

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SYNTHETIC ENAMELS

(Baking or Air Drying)

The paint manufacturer's closest approach to a porcelain finish in enamel.

Has unusual adhesion - hardness of baked finish - high gloss or dull - quick bake. High solids give exceptional build and toughness without brittleness.

Available in one coat white, black, and solid colors for metal furniture, refrigerators, etc. Technical advice gladly furnished. *It stands the test!*

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Established 1876

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type. The practical way out of the difficulty seems to be to use the ordinary low-boiling solvent lacquers, such as are generally made for industrial purposes, and to have on hand about five gallons of retarder which can be added on hot, humid days. This retarder takes the place of the ordinary thinner and slows up the drying of the lacquer sufficiently to prevent blushing.—J. B. Day & Co.

Reds That Don't Bleed; How To Use Them

On page 47, in the September issue I notice an interesting article on "Finishing Neon Electric Signs," by William G. Martin of the Electric Products Corporation at Denver, Colo.

In the fourth paragraph the author mentions that light colors are not sprayed over reds. The quite natural inference in that statement would be the understood fact that most reds bleed badly into subsequent coats of finishing material, because this trouble has always been the bane of finishers and decorators.

It is so little known, even among many of the paint manufacturers, that absolutely non-bleeding reds are procurable, I should like you to inform readers of INDUSTRIAL FINISHING accordingly, so that they may seek this type of color when the need for same arises. (I haven't any connection with the production or sale of this commodity, therefore this is not an advertisement.)

Red lacquers are now obtainable which permit of cutting in or coating over with white lacquer without the slightest tinge of discoloration resulting. This has become possible through the advent of the new cadmium red

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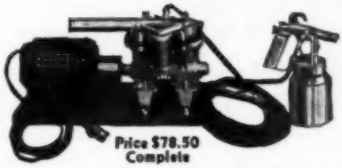

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We urge you to compare it, point by point, with any other equipment in its price range. Check its performance...see it spray a quart of four hour enamel in 1 minute and 28 seconds! Note the width of its fan with light materials... a full fourteen inches! With the heaviest, 6 to 8 inches! And it sprays EVERY type of paint material with perfect vaporization. That's why it will do your job faster, more economically, with better results,

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Water Stain—

requires ***no sanding . . . . . no wash coat . . . .*** saves 24 hours in the finishing room. One furniture manufacturer saves $1.50 on every dining room suite.

Positively fast to light . . . . made only from water aniline colors. Inquiries solicited. We will be pleased to demonstrate this product or send samples for you to try . . . . Our service department is at your disposal.

Finishing Products Co.
3725 E. 13th St. Indianapolis, Ind.

The ostrich, you know, buries his head when sand is in the air.

The man responsible for production at a profit, keeps his chin up and his eyes open when a product comes along that meets his requirements cheaper and more satisfactorily.

Lacquer for your interiors, and damp-proofing, saves time, cuts costs and eliminates unnecessary operations in your finishing room.

Brasington's No. 50 Drawer Lacquer at $1.10 F. O. B. Your City. 5 Gal. at Drum Price.

In clear or in tints for drawers, and damp-proofing.

BRASINGTON PAINT MFG. CO.

MARIETTA, OHIO.

pigments which possess several remarkable qualities, namely: (1) non-bleeding, and insoluble in all lacquer, varnish and paint vehicles; (2) permanent, i.e., fast to light; (3) alkali resisting, and heat-resisting; (4) freedom from settling in lacquers and other made-up finishing materials.

These reds range in shade from maroon to deep and medium, to a brilliant light which practically matches genuine English (quicksilver) vermilion, and thence continue through the orange into several shades of cadmium yellows. Cadmium yellow, like cadmium red, is a permanent or non-fading color. This feature is further exemplified in the fact that cadmium red is the only red pigment which will retain its permanency to light in delicate tints. Red, lavender, pink and old rose tints in white, secured through the use of cadmium reds, are absolutely permanent.

It might be stated that self-colors have been considered stable, and which really are stable when used full density, generally lose that stability when the color is reduced to delicate shades and tints. It is because of this greater reliability of cadmium that finishers should be very much interested in the desirability of this pigmentation in lacquers and enamels for particularly high-grade work, and should demand this class of products when purchasing their finishing materials.

Apropos to the foregoing topic could be related various practical means to overcome bleeding when refinishing over old red-finished surfaces; for instance the following examples:

For sealing over enamel and paint-type finishes, it has proved very successful to apply a spirit varnish, preferably pigmented

with a strong-covering white like titanium oxide. The spirit varnish would be the usual type of 4-lbs. of Manila gum cut or dissolved into one gallon of denatured alcohol; and grinding into this about 4-lbs. of the Titanox pigment. Some very large sign companies are using this method for painting out old signs on which bleeding red colors would otherwise work up through to the surface. This type of sealer permits following almost immediately with the finishing coat of paint, enamel, or lacquer. Furthermore, for plastered walls this is excellent to stop the seeping through of all kinds of stains—including coal tar and alkali.

Where decorators encounter wall surfaces in unpaintable condition due to stains caused by water, cresote, aniline dye or other bleeding color, saltpeter, etc., an effective remedy is a compound in approximately the following proportions:

Powdered soap .....1-oz.
Powdered glue .....¼-oz.
Powdered hydrated lime.....11¾-oz.

This dry mixture is to be dissolved into one quart of water when ready to use on the job. It is then ready to apply with a wall brush; it will dry in about 15 minutes; it effectually destroys and eradicates the stain so that same will not show through a thin film of coloring of pastel or mural decoration.

In wood finishing, particularly refinishing furniture previously mahogany-stained, the following material has proved entirely effectual in very stubborn cases: Dissolve one pound of casein, into three quarts of water, containing four fluid ounces of aqua ammonia.

This will produce about one gallon of solution, which should be

If Results Are What You Want

IT matters little how much — or how little your finish costs you — unless you get the desired results. Economy purchased at the price of finishing results — is a luxury none can afford — while top price does not necessarily mean maximum quality.

All we ask is that you try J-W-F finishing supplies — test them thoroughly in your own plant — check results with any finish now on the market — and then compare costs.

This test has been made in the finishing rooms of many plants — and in a great majority of the cases — the Jamestown Wood Finishing Company won the decision.

If fool proof — dependable finish is what you want — and if you are willing to pay what a good finish is worth — but no more — then J-W-F finishing supplies should have your serious consideration. May we have the opportunity to show you why?

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Jamestown Wood Finishing Co. products are guaranteed. If they will not do for you what we claim for them your money will be refunded.

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CRYSTAL
SEALER
FOR
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strained to free it of any insoluble particles suspended or floating on top. Apply this to the work, avoiding unnecessary brushing, which would drag particles of dye out of the pores of the wood; on this account spraying is advised. If sanding is to follow, it should be done very lightly so as to remove only coarse nibs—and it is preferable to avoid any sanding of the first coat, and do only such sanding of the second coat as may be essential. Obviously, care must be exercised to avoid cutting through the sealer coat. From this point, the work can proceed with either enamel or lacquer.—E. Perry.

Lacquer replaced paint and varnish in the plant of a large manufacturer of private cars in the fall of 1923 and now it is used almost universally by manufacturers of such automobiles.

Standard Varnish Acquires National Varnish Co.

Negotiations have been completed whereby the Standard Varnish Works, New York, acquires the business and good will of the National Varnish Co. The National Varnish Co., of which Mr. F. W. Herz is president, and Mr. John E. Sanderson, vice-president, has been in business for 22 years and has an exceptionally good standing among the trade.

Messrs. Herz and Sanderson join Standard Varnish Works to direct respectively the National salesmen and the manufacture of products for their customers under the National formula.

Standard Varnish Works was founded in 1870. Five years ago, Toch Brothers, manufacturers of technical paints, founded in 1848, was merged with the Standard Varnish Works. Dr. Maximilian Toch and Mr. Henry M. Toch are now identified with the Standard Varnish Works, Mr. Henry M. Toch being chairman of the Board of Directors.

Standard Varnish Works factories are located at Elm Park, Staten Island; Linden, New Jersey; Chicago; Detroit; Michigan; Los Angeles; London and Berlin.

Mr. J. W. Robson is president of the Standard Varnish Works.

Industrial Finishing

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

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EDITORIAL

What's New in Equipment

One of the foremost achievements in equipment developed to serve the modern industrial finishing department is the *fadometer*. Designed originally for use in the laboratories of finishing material manufacturers, the fadometer today is being employed by more and more finish users to aid in the selection and testing of materials, and for showing up possible color discords and actual color characteristics. With this instrument, those interested can learn in advance what the behavior of certain materials will be during any specified length of time when subjected to any kind of weather or atmospheric conditions designated.

Automatic spraying equipment has come to the front with leaps and bounds; it can be employed to spray almost anything where volume production is necessary. It is available in multicolor combinations or in gang spray units of from 2 to 24 guns, and can be operated by one man.

Although automatic syraying is still in its infancy, it is now being used successfully for spraying automobile headlights, shock absorbers, rubber for heels, cardboard boxes, golf balls, radio speakers and numerous other articles. Really, its production capacity is difficult to determine definitely owing to the inability of those using it to handle the articles rapidly enough after they have been sprayed.

Conveyors have wonderful possibilities where there is volume production in standard articles, and they are being installed in more and more factories every year. There is a type of conveyor and conveyor drive to suit practically every condition in industry, but the selection and design of such a job is an engineering problem for a conveyor specialist. One might as well attempt to build his own clock or automobile as to build his own conveyor system.

Naturally, numerous other mechanical equipment useful in finishing has been developed and improved, and special attention will be directed to it in future issues of INDUSTRIAL FINISHING.

To Get Artificial Daylight

Some operations in the finishing room can be performed efficiently under an ordinary incandescent lighting system, but in others, where color plays an important part, the use of the incandescent system proves inadequate. There are at least two ways of removing this difficulty;

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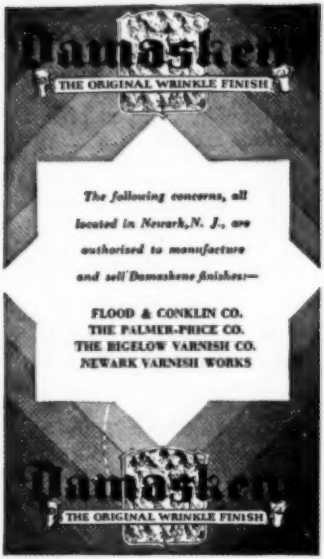
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one is to install a *mercury vapor lighting system* in those departments requiring artificial daylight; the other is to adopt the less expensive means by equipping the outlets in these departments with the *incandescent daylight lamps.*

An authority on lighting states that artificial daylight may be obtained in three degrees of light quality. The daylight lamp having a blue-glass bulb produces a light equal in quality to ordinary afternoon sunlight with about 35% absorption. Enclosed blue-glass globes will produce a light equal to mid-day sunlight with about 60% absorption, but the best color matching units consist of globes having special blue-glass plates that produce the light of the north sky with about 85% absorption. These lamps produce a much whiter light than the regular incandescent lamp, therefore colors appear more nearly in their true values.

It must be borne in mind that any artificial daylight lamp is of lower efficiency than the regular lamp due to the absorption of certain rays by the blue-glass, therefore to maintain a given intensity of light, more wattage must be provided—approximately 35%, 60% and 85% respectively.

Staining, Shellacing, Sanding, Filling and Drying

Lacquer on wood gives a good finish if the operation is carried out successfully. I believe that about 90% of all lacquer troubles are traceable to improper conditions, incorrect application or to subsequent careless handling, or to a combination of these causes.

The finisher must be particular as to what kind of stain he uses

under lacquer. It is important that the wood surface be smoothly sanded and carefully filled so as to present an absolutely "true" surface. Lacquer does not fill the depressions as varnish does, this being due to its thinness and rapid drying.

Some woods, such as mahogany, for example, are liable to "grain raising" after being stained. When finishing these woods, it is best to sponge the wood surface with warm water and when dry, cut down the raised fibers by carefully sanding with fine sharp sandpaper. This leaves little if any grain to rise when the surface is stained.

Another treatment is to give the wood a wash coat of shellac made up in the proportion of eight gallons of denatured alcohol to one gallon of shellac (4-lb. cut). This will stiffen the raised fibers so they can be easily cut down by sanding. The finisher must be careful to avoid making this wash coat of shellac too thin or applying it too liberally; otherwise it will penetrate the pores of the wood too far and interfere with the filling.

In any kind of wood finishing it is important that the undercoat be dry before the next coat is applied, as otherwise blushing will result.

Assuming that the spray gun is correctly handled, the humidity of the atmosphere is not excessive, there is no grease or dirt on the wood, and no oil or moisture is introduced from the spray gun, a good finish should be obtaind.

Since any surface defects in the wood will show up plainly through the lacquer, the actual finish obtained is largely dependent on the initial condition of the wood and the thoroughness of the sanding and filling.—W. E. Warner, Essex, Eng.

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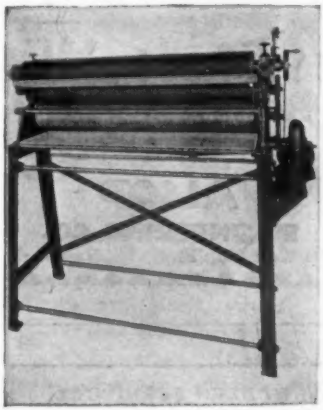
For Applying Lacquers, Enamels, Varnishes, etc.



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To Remove Ink Stampings From Iron

Manufacturers who purchase and use sheet metal sometimes have trouble with the ink stampings which have been put on at the mills to denote sizes, specifications or the inspector's okay. If these ink markings are not removed before finishing begins, the ink is likely to show or bleed through the finish. Even those marks that appear dim will probably give trouble if they are not removed or treated.

These ink markings can be removed quickly and cheaply by the following method:

A workman sets aside the ink marked pieces until he has accumulated about 25 pieces. Then he carefully brushes crude carbolic acid over the ink markings, going from one piece to another. By the time he has brushed the last piece, the first ones are ready to be mopped off with a rag saturated with denatured alcohol. If this method is followed with proper precautions, ink stamping troubles will disappear.—Geo. Heidenreich, Jr.

Cleaning Metal After Using Paint Remover

Cleaning the metal properly after having used paint and varnish remover has been found to be somewhat difficult for the custom shops, regardless of how many times the metal has been washed and sanded. Nearly all custom shops experience this trouble from time to time.

Where the paraffin wax has not been thoroughly washed off, trouble with wet spots will occur after either the undercoats or finishing coats have been applied.

However, I happen to know of a method of cleaning the metal after paint and varnish remover has been used, which, if properly followed out as I outline, will work satisfactorily in every respect as far as removing the paraffin wax or any other foreign substances is concerned.

After the old finish has been removed, wash the metal surface with high-test gasoline and follow up by sanding with No. 180 sandpaper. After this has been done, repeat the operation of washing off the metal with high-test gasoline, and follow up by wiping the metal dry with clean rags. It is essential that the metal should stand over night, as this gives it plenty of time to dry thoroughly. Next day, wash the surface again with high-test gasoline and sand lightly with No. 180 sandpaper. After this is done, wash the metal with high-test gasoline, using it freely; then carefully wipe the metal dry.

In all cases where paint and varnish remover has been used to remove the old finish, I prefer to use an oil-base primer.

This method of cleaning the metal is somewhat longer in the operation of cleaning, but it will prove economical per unit. If this method of cleaning metal after paint and varnish remover has been used is followed as outlined, there should be no trouble experienced from paraffin wax.—E. H. Guth.

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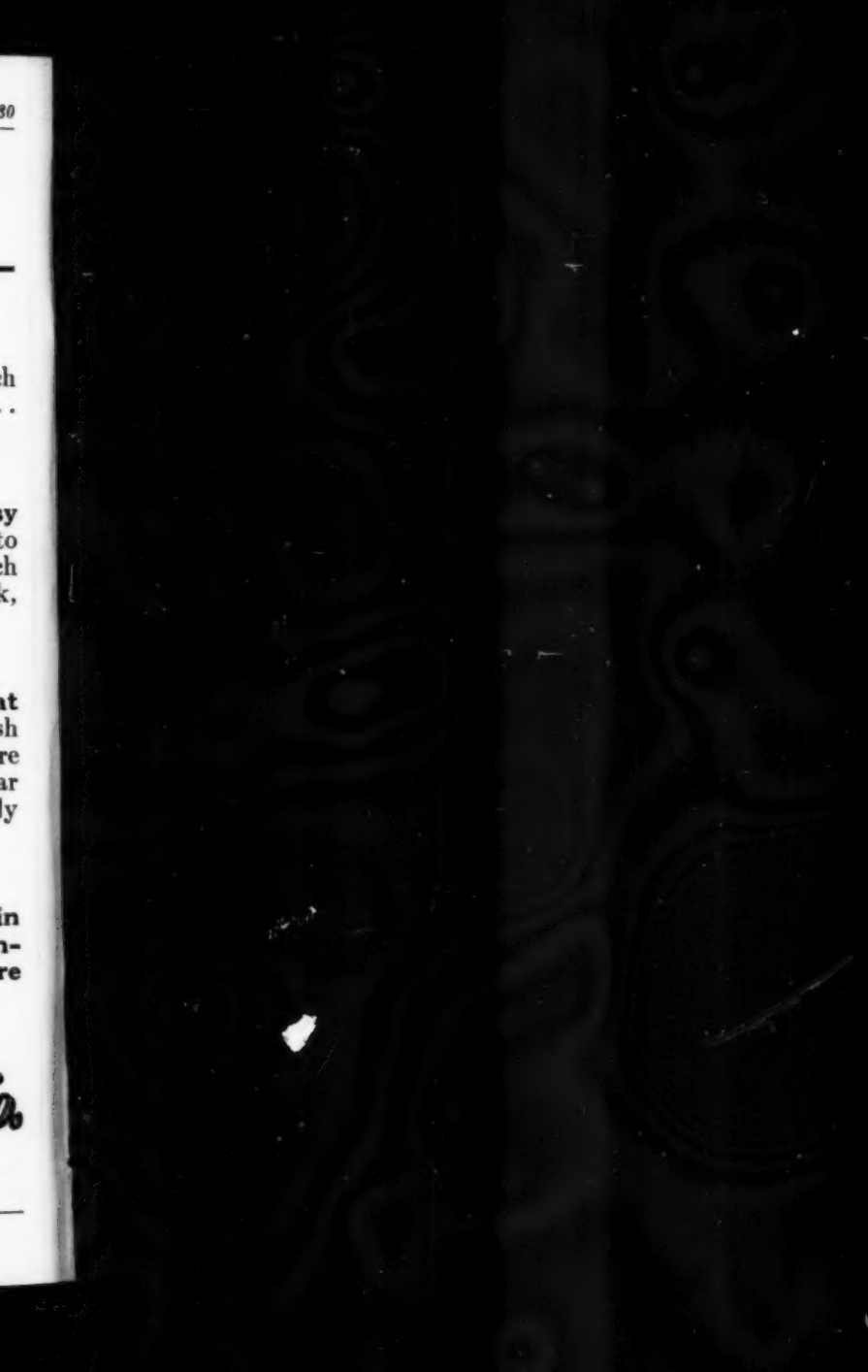
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